

Part 1

Introduction

At the ninth meeting of the Economic Development Committee for the Movement of Exports (the EDC) on 25 July 1966, a working party was set up on the development of air freight in the United Kingdom, with the following terms of reference.

To examine current developments and future possibilities of air freight in the UK for exports and entrepot trade with particular reference to the development of all-freight services and of cargo terminals and facilities.

To identify factors delaying the economic development of air freight and to make recommendations for action to enable air freight to make its optimum contribution to the movements of exports.

Membership of the working party was:

Mr K St Johnston, member of the EDC (chairman)

Sir Alexander Glen

Mr M G Graham

Mr S F Wheatcroft

Mr P A Robinson, Civil Aviation Department, Board of Trade

Captain S I Turner, British Air Line Pilots Association

Mr E G Whitaker, National Ports Council

Mr A J Clarke, secretary of the EDC (secretary)

Although Mr Robinson has participated fully in the work of the working party, it is necessary for him formally to reserve his position and that of the Board of Trade in regard to such comments or recommendations in this report as affect the Board of Trade or any bodies for which the Board is answerable.

The working party was set up in the belief that, with the increasing importance of air freight in the movement of exports, all possible steps must be taken to ensure that it is fully competitive with other forms of transport. This report accordingly attempts to place air freight in a wider context and to point to steps which might be taken to enable it to play its full economic part in freight transport as a whole.

The working party has held ten meetings, has taken part in a number of visits and discussions and has considered many working papers, several of which are appended to this report.

Summary

Now is a time of change in all forms of transport; not merely change brought about by technological advances in machines but radical changes, born of a comparatively sudden awareness of the significance of through transport which transcends the component parts of the system. Transport interests, translating this concept into practice, can weld the various stages of transport into a flow of freight which is systematic, controlled and stable in cost.

For air freight a double opportunity exists, as this time of change is matched by the development of aircraft whose economics for the first time offer real prospects of success for freight standing on its own.

This report aims to demonstrate our belief in five major themes:

- 1 An efficient air freight industry that fits into this through-transport pattern cannot fail to confer advantages, in terms of service and competitiveness, on British exporters. There is plenty of evidence that British industrialists are effectively grasping the significance of through transport, particularly among the larger firms, but just as clearly there remains much in the way of proselytizing to be done, and in this shipping and forwarding agents have an especial role.
- 2 Ultimately, the expansion of air freight will depend on airlines having the right aircraft and a structure of rates which reflects their costs more closely and takes into account the differences to those costs brought about by more economical handling and documentary methods. The need to isolate costs in relation to freight has only recently emerged, and, as this is done internationally, it is to be hoped that a cool reappraisal of the IATA rate structure will take place.
- 3 Probably the greatest single area for reducing ground operating costs lies in building up larger and unitized consignments, with savings on both the physical and documentary sides. There is by now little novel in this conclusion, but it is clear that neither the IATA rate structure nor the policies of the airlines themselves have been conducive to a rapid enough expansion in the field of physical consolidation. Indeed, since the ideal in this respect is for unit loads to be assembled away from airports and near to the origin of cargo, the United Kingdom is probably uniquely placed to take advantage of this development thanks to the emerging pattern of inland clearance depots, linked by rail and road to the freight facilities under construction at Heathrow airport. Here again, agents have an important part to play, as consolidators.
- 4 The growth of air freight may well lead in due course to the need for airlines to separate freight operations entirely from passenger operations and thus to give increasingly specialized management and financial control to the freight side of the business.
- 5 An essential support to the efforts of airlines and other operators must be the establishment of a network of well-equipped airports which will satisfy regional needs but does not lead to undue fragmentation of resources and services. For the next few years Heathrow will remain dominant and it is vital that the new cargo terminal should prove equal to its task, not least for entrepot trade.

At this time of change in transport generally and of breakthrough in air freight particularly, we are confident that the British air freight industry will succeed in preparing itself in all possible respects for the next decade, which will be crucial.

Conclusions and Recommendations

Addressed to

REFERENCES ARE TO PARAGRAPHS OF THE REPORT

Board of Trade, airlines

ENEC, CBI, Chambers of Commerce, Trade associations, Institute of Exports, exporters generally.

ENEC, CBI, Chambers of Commerce, Trade associations, Institute of Exports, exporters generally.

ISFA

Airport managements

Airlines

Airlines

Airlines

Airlines

HM Customs, Airlines, ISFA, British Shippers' Council

BAA, Airlines, ISFA, Exporters
Road and rail carriers

Ministry of Transport
GUC

Exporters, Agents

Airlines

Airlines
HM Customs
Exporters
Importers
Agents
Surface carriers

- 1 There is a need for more information on the origin and destination of goods for air freight, to assist airport planning and the development of air services. (5)
- 2 The involvement of top management of exporting and importing businesses in the total distribution cost concept is becoming increasingly important, with the possibility of economies in both direct and indirect costs; this is as true in air freight as in other forms of transport. (12)
- 3 Exporters are urged wherever possible to bear in mind the advantages of delivered price terms, which help retain control of the whole transport operation. (14)
- 4 There is a growing need for shipping and forwarding agents who are thoroughly conversant with transport practices and possibilities overseas, with the ability to provide through transport services. (14)
- 5 UK airports should re-examine their policy for landing fees in view of the level paid by freighter aircraft in the UK, which is high by international standards. (21)
- 6 In view of the lack of reliable statistical data with which to isolate the various elements in ground-handling costs, airlines should intensify their studies in this field so that these costs may be reduced and a keener structure of charges evolved. (22)
- 7 As the main savings in ground costs lie in the elimination of the individual handling of small packages and consignments, airlines should encourage their consolidation into larger physical units and consignments, whether on or away from airports. (27)
- 8 In order to achieve this, British airlines should use their influence at IATA to obtain realistic amendments to the rate structure, based on the savings obtainable from unitization. These should include weight breakpoints at higher levels on routes other than the North Atlantic (and for certain Far East destinations) and absolute discounts for each container rather than percentage discounts on the freight rate. (27-29)
- 9 Consideration should be given to greater emphasis on selling space in aircraft rather than weight, up to a certain density of cargo. (30)
- 10 Agreement should be reached to permit containers with a volume of less than 200 cu ft to use inland clearance depots for customs clearance. (33)
- 11 The co-ordination of road and rail services with Heathrow should be encouraged and, in particular, steps should be taken to reduce lorry congestion whether by an appointments system or other means. (34)
- 12 Clear and adequate signposting should be urgently provided between the M1 and Heathrow. (35)
- 13 Air waybills should conform more exactly to the standards laid down at IATA. (36)
- 14 Airlines should co-operate in levying agreed charges for demurrage. (39)
- 15 HM Customs and the commercial interests concerned should give careful consideration to the possible advantages of the system obtaining in the USA where the financial bonding of suitable carriers and agents reduces reliance on physical security. (40)
- 16 We welcome the review of the structure of their field organisation embarked on by HM Customs. (41)

- 17 More use should be made of telephone and teleprinter for advising on the arrival of consignments for import and, in general, for passing information forward and back on the progress of consignments, to both agents and shippers, and this should be encouraged by the airlines. (42)
- 18 There will be a need for light, strong, durable containers to ISO specifications, particularly for use in jumbo jets. (46)
- 19 There is a need for a pallet fully interchangeable between different types of aircraft, and for air pallets to correspond with those used in surface transport. (46)
- 20 The standard IATA container programme should be rationalized to consist of fewer types but should include smaller sizes than the present minimum of 61.75 cu ft and other forms of unit-load capable of top-loading. (47)
- 21 Airport cargo terminals, although planned individually, should accord as far as possible with the international handling systems which will be encountered. (48)
- 22 Airlines and the aircraft industry should give careful consideration to the claims of cargo in the initial design stages of aircraft destined for both passenger and cargo use. (52)
- 23 In the development of new passenger short-haul aircraft, careful attention should be given to allow a freighter version capable of carrying 180 containers of 8 ft x 8 ft end profile. (53)
- 24 Airworthiness requirements in respect of cargo and the responsibilities of the aircraft manufacturer and operator should be continually reviewed to keep pace with the expansion of all-freight services. (54)
- 25 Regulatory provisions and operators' practices should be continually reviewed in the light of the increasing use of all-freight aircraft and developments in the characteristics of air cargo. (54)
- 26 The decisions of the Air Transport Licensing Board in regard to all-freight services achieve a reasonable balance between the economic factors involved, but the importance of air freight in the licensing of passenger services should be recognised. (57)
- 27 British airlines at IATA should press for amendments to the rate structure based on a realistic appraisal of the relevant cost factors. (59)
- 28 In view of the increasing importance of air freight, British airlines should consider the establishment of separate freight divisions, thus giving relatively more emphasis to freight at senior management levels. (60)
- 29 We welcome the setting up of machinery whereby British airlines hold consultations with ISFA before IATA conferences at which the interests of agents are likely to be affected and government departments consult ISFA before ratifying IATA resolutions which affect agents. (63)
- 30 Discussions should be held between agents and airlines to find an equitable means of remunerating agents for the handling of goods on the ground. (64)
- 31 Shipping and forwarding agents involved in air freight should build up the prestige, support and resources of ISFA, particularly so as to strengthen its National Air Section. (65)
- 32 Agents should seek to rationalize the structure of their industry so as to provide a more comprehensive service at home and abroad. (65)
- 33 Discounts on containers and weight breakpoints should be framed so as to encourage physical consolidation, particularly on dense traffic routes. (66)

Airlines, Agents, Exporters, Importers

Airlines

Airlines, manufacturers

Airlines

Airlines
Airport managementsAirlines
Aircraft manufacturersMin of Technology, Board
of Trade
BEA
Aircraft manufacturers
Aircraft manufacturers
Airlines
Air Registration Board
Board of Trade
Board of Trade, Airlines
BALPA

Airlines

Airlines

Airlines
ISFAShipping and forwarding
agents

ISFA

Airlines

- | | | |
|--|--------------------------------------|--|
| | ISFA | 34 Agents should co-operate in providing consolidated rail and road services from the provinces to Heathrow. (67) |
| | Board of Trade
Airport management | 35 Careful thought should be given at a national level to avoiding excessive duplication of facilities for air freight at provincial airports. (68, 69) |
| | BAA | 36 BAA should implement the proposal for a single import shed at Prestwick. (73) |
| | BAA Ministry of Transport,
GLC | 37 Steps should be taken to provide adequate routeing and signposting between the three London airports. |
| | HM Customs, BAA, ISFA | 38 Given the importance of progressive forwarding agents in air-freight development, urgent attention should be directed to the provision of a bonded shed in the new Heathrow cargo terminal for those agents who can qualify as consolidators of untaxed cargo and providers of through transport services. (80) |
| | Airlines | 39 BEA and other short-haul operators should reduce the time by which goods must be delivered for transfer to a particular flight, with a view to increasing the attraction of Heathrow for entrepot trade. (82) |
| | HM Customs | 40 HM Customs should consider whether any easement is possible on the procedure for the transshipment of consignments arriving in UK from abroad for consolidation for other foreign destinations. (83) |
| | BAA | 41 BAA, in forming its long-term objectives, should undertake extensive research in the detailed planning and layout of individual airports and should co-operate fully with the airlines in applying the lessons to be drawn from such research. (87) |

Part 2

How air freight has grown

1 Development of air freight

1 The carriage of freight by air is still at an early stage of development. It has, with a few exceptions in the USA, developed principally as an adjunct to passenger services: that is to say the space in the aircraft which cannot be used for passengers and is not needed for baggage or fuel can be used for freight at little extra direct operating cost, merely a small extra amount of fuel. It is, therefore, economically worthwhile if it covers this marginal cost and the costs incurred for ground handling, sales promotion and accounting. It is certain that this belly-hold cargo will continue to be an important element in airfreight, providing as it does a good return on low marginal cost.

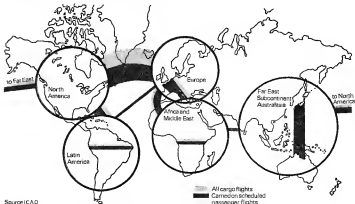
2 In recent years certain factors have combined to encourage the use of all-freight aircraft. Firstly, airlines have felt the need to back up the limited space available in passenger aircraft with all-freight services which might be routed and timed more conveniently for the customer; secondly, largely owing to increased size, the direct operating costs of aircraft have fallen to the point where a return on capital can be foreseen even if not yet achieved for all-freight services on a full cost basis; and thirdly, manufacturers and other transport users have become more aware of the total distribution cost concept, and have come to realize that higher freight charges may be offset by cheaper packaging and insurance, and savings in warehousing costs and capital tied up in transit—for this both the airlines, with their recent imaginative advertising, and the general movement to make management more aware of the transport of goods have been responsible.

3 In the world context, air freight is at present growing very fast, at over 20 per cent a year, from a small base: it still probably accounts for under 10 per cent by value of world international trade. The map and table on page 9 show the relative amount of ton miles flown between the main areas of the world in 1964, although this measure does give undue significance to the longer routes. They emphasize the ton-mile density of the North Atlantic routes with a third of the total and over half of all-cargo flights. In comparison, freight to and from the Far East tends to go on passenger flights, as does air freight to Europe, large in tonnage but short in route miles, 58 per cent of BSA's international freight going in belly hold.

4 Background information on air freight in the United Kingdom is summarized in Appendix 1. Tables 2 and 3 show the increasing importance of air freight in the movement of British exports, emphasizing once again the large value of goods carried by air to Europe. To the Common Market countries £165m of British exports went by air in 1966, compared with £101m to the USA and £51m to Canada.

Free world international cargo traffic flow/1964

Width of band represents relative amount of ton-miles



Source: ICAO

Table 1/Revenue ton-miles carried/1964

	<i>Per cent of international total</i>	
	<i>All-cargo flights</i>	<i>All-cargo and combination flights</i>
North Atlantic	52.0	33.0
Europe	14.6	14.2
Far East	3.7	11.5
North America—Latin America	14.7	9.4
Europe—Middle East & Africa	3.5	8.1
North America—Far East	5.0	7.8
South America	3.7	4.3
Africa & Middle East	1.8	3.9
North America	0.7	3.0
Africa & Middle East—Far East	—	2.7
South Atlantic	0.3	1.8
Europe to Far East	—	0.3
Total	100 %	100 %

Source: ICAO

Table 2/UK exports

Year	Total £m f o b	BY AIR	
		£m f o b	Per cent of total U K exports
1956	3143.3	92.0	2.9
1961	3682.4	219.7	6.0
1966	5042.2	483.1	9.6

Notes:

(a) Reports for 1966 include figures for precious stones and pearls not previously recorded.

(b) Complete aircraft flown out under their own power are included in the totals for all United Kingdom exports but are excluded from the figures of exports by air.

Table 3/UK exports to selected countries

	1961			1966		
	TOTAL	BY AIR		TOTAL	BY AIR	
	£m f o b	£m f o b	% of total	£m f o b	£m f o b	% of total
Belgium	77.3	5.5	7.2	180.7	11.7	6.5
France	112.2	28.5	25.4	196.8	56.3	28.6
W Germany	171.3	16.1	9.4	253.0	49.8	19.7
Italy	114.6	12.4	10.8	127.9	21.8	17.0
Netherlands	137.6	13.1	9.5	196.3	25.7	13.1
Austria	22.0	1.3	5.9	40.8	3.4	8.3
Denmark	92.0	2.5	2.7	133.9	6.1	5.3
Finland	51.1	0.8	1.6	75.3	1.0	1.3
Norway	85.2	1.6	1.9	106.8	3.9	3.7
Portugal	35.9	0.7	1.9	46.2	2.5	5.4
Sweden	141.2	5.7	4.0	230.1	13.6	5.9
Switzerland	52.9	5.9	11.1	105.1	15.7	14.9
Irish Republic	133.2	8.5	6.4	179.1	21.6	12.1
USA	280.5	37.8	13.5	620.9	100.9	16.3
Canada	221.7	26.3	11.9	214.9	31.4	14.6
India	151.8	4.9	3.2	95.5	5.0	5.2
Australia	201.7	3.7	1.8	255.5	9.2	3.6
South Africa	147.1	2.1	1.4	242.4	6.2	2.6
All other countries	1453.1	42.3	2.9	1741.0	97.2	5.6
Totals	3682.4	219.7	6.0	5042.2	483.0	9.6

5 Heathrow Airport (London), which accounted for two-thirds of the traffic leaving this country on international flights in 1965, has achieved a dominant position within the UK. This is partly because of the frequency of passenger flights from Heathrow and partly because of the tendency in air freight, as with passenger air transport, to evolve a system of trunk routes and feeder services radiating from focal points. With all-freight services this tendency operates usually until a daily flight has been established for a particular route, which is as frequent a service as is likely to be demanded under today's circumstances by most shippers. Thereafter, both congestion at Heathrow and the building-up of sources of air cargo elsewhere should lead to more services from a limited number of provincial airports. *Through Transport to Europe* (Published by HMSO, June 1966, Price 9s) pointed to the need for better statistics relating to the origin and destination of air freight to enable regional facilities to be planned on a rational basis, and we hope that these will increasingly become available.

Conclusion

There is a need for more information on the origin and destination of goods for air freight, to assist airport planning and the development of air services.

II Advantages and disadvantages of air freight

6 The advantages of air freight were listed in a study by the Stanford Research Institute, California, for Emery Air Freight (Appendix 2) to identify potential users by companies of air freight. The three main categories are:

- (a) speed of delivery: for market penetration, increased use of production facilities, reducing investment of goods in transit, or emergencies
- (b) reduction of inventory and storage costs: by reducing stocks, risk of obsolescence, cost of warehousing, or use of middlemen
- (c) superior conditions of carriage: by reducing damage, loss, packaging and insurance; and by better control of handling especially for smaller packages.

7 These advantages can be considerable and are brought out in Appendix 3, which consists of case studies used by BSA in a recent series of advertisements. These are selected examples but they do show that, when the total costs involved are assessed, air freight on short routes can frequently be cheaper than surface, especially for goods of high value requiring careful handling, such as delicate machinery. As air freight expands it will become economic to send by air goods of increasingly low value. Over long distances the speed advantage of air freight remains the dominant factor.

8 There are, however, factors which militate against the use of air freight; some of these are inevitable, others can be remedied and are due to inadequate awareness of its advantages or to draw-backs in the manner of its operation. The main example of the former is that for the run of low-value, heavy or bulky goods air freight is simply too expensive, except in an emergency; regular shipments of raw materials will continue to travel almost always by sea. Another reason is that the advantage hitherto enjoyed by air freight in requiring less costly packaging and insurance is being diminished by the improvements in surface transport where modern handling equipment and containers are lessening the chance of damage. The speed advantage of air freight has also been reduced by improvements in surface transport such as roll-on/roll-off services to the Continent. Of interest in this connection is the growing use of air freight in combination with all forms of surface transport, effecting a compromise between time and cost.

9 Subsequent sections of this report will deal with those impediments to the development of air freight which could be removed or at least diminished. It must be emphasized that these are not universal and in many cases are recognised and being dealt with. They fall into four classes:

- (a) lack of awareness by potential users; particularly inadequate appreciation by exporters and importers of all the cost factors involved (sometimes connected with terms of selling), on occasions resulting from a firm's structure, when the shipping department is isolated or left to employ out-of-date methods
- (b) unnecessarily high costs, due to the lack of return loads or to shortcomings in the tariff structure
- (c) erosion of speed advantage, including administrative delays in the U.K. or abroad, limited working hours of ground departments, inadequate handling facilities, and inadequate arrangements for surface transport to and from airports
- (d) insufficient attention given to freight by providers of services and facilities: this includes inconvenient flight times of mixed passenger and freight services, inadequate standardisation of containers and pallets, inadequate facilities at airports, and insufficient attention to air freight requirements in aircraft design.

10 We realize that, even when these impediments have been removed, air freight will still only be suitable for a minority of goods. We believe, however, that there is room for a fuller appreciation of the benefits of air freight and that with a reduction in these impediments air freight could make a still greater contribution to the movement of exports.

The following sections are devoted to discussing some of the practical measures which could be taken to bring this about.

The costing and relative competitiveness of air freight

III The total distribution cost concept

11 In *Through Transport to Europe* much was said on the value to management of studying the terms of selling employed and the indirect as well as the direct costs of distribution. We particularly draw attention to recommendations 10 and 11 which are as follows:

'Exporters should study the advantages, both from the point of view the of balance of payments and also from the point of view of their export competitiveness and the efficiency of their own transport methods, of working on a delivered price instead of f.o.b. or c.i.f. to port.

Managements should pay more attention to studying the indirect of costs packing, loading and moving their exports, and of their stocking policy, and should regard delivery to customers on the Continent in the same way as they would regard deliveries to customers in this country'.

12 Since the publication of *Through Transport to Europe* there has been considerable public discussion in the press, by bodies such as the British National Export Council, The British Shippers' Council and the Association of British Chambers of Commerce, and in the recently launched monthly *Freight Management*, to convince management of the importance of transport within a company's total operation. We have had discussions with the British Shippers' Council (BSC) on the role and requirements of shippers. The views of BSC are summarized in Appendix 4 and many of the valuable points made are taken up

later in this report. Efficient firms are increasingly ensuring that transport is a matter of immediate boardroom concern and in particular that shipping departments work closely with the production and marketing sides. Continuing assessment of all cost factors involved is necessary in determining where air freight can be advantageous and where surface transport is more economic, and the Stanford list (Appendix 2) can help in identifying these.

13 The BEA case studies (Appendix 3) show, in particular, the substantial savings in packaging costs, which can in certain cases pay for the entire freight charges, while insurance is another item which can be substantially reduced. Although increasingly sophisticated methods of surface transport are lessening these advantages, air is likely to retain its attraction for delicate machinery which needs no more than a polythene bag if carefully handled. Moreover air freight can help to open up new markets for fashion garments, perishable goods and new products, and can reduce the amount of capital held up in the pipeline for high-value goods such as computers.

14 A natural corollary to the working out of total distribution costs is the use of delivered price terms of selling. The case was argued in *Through Transport to Europe* and is accepted by a good many exporters, as it assists the assessment of total distribution costs and also provides physical control of goods all the way to the consignee. Some reservations have been expressed, however, on the grounds that frequently it is not commercially possible to sell on a delivered price basis and, when it is, it may be difficult for smaller firms to be fully conversant with the onward routing and Customs procedures in foreign countries. The need for shipping and forwarding agencies with a network of foreign offices and correspondents should be recognized, as the ability to provide through transport services will be increasingly required.

Conclusions

The involvement of top management of exporting and importing businesses in the total distribution cost concept is becoming increasingly important, with the possibility of economies in both direct and indirect costs; this is as true in air freight as in other forms of transport.

Exporters are urged wherever possible to bear in mind the advantages of delivered price terms, which help retain control of the whole transport operation.

There is a growing need for shipping and forwarding agents who are thoroughly conversant with transport practices and possibilities overseas, with the ability to provide through transport services.

IV Costs

15 The structure of air cargo costs is set out in Appendix 5. It is convenient to break these down into two parts; the direct costs of operating aircraft, and the ground operating costs incurred in handling and administration on the ground.

Direct aircraft operating costs

16 These consist of the depreciation, insurance, maintenance and overhaul of the aircraft, fuel costs, crew costs and landing charges. With the exception of the last, their level is governed more by original cost and technological development than by day-to-day operational efficiency or administrative control. It is instructive, however, to see how these direct costs are falling. Appendix 6 sets

out operational, dimensional and economic data of sixteen aircraft types ranging from the pre-war DC 3 to the Boeing 747 planned to operate from 1970. While the figures shown are inevitably approximate and must be treated with reserve, they do illustrate the general level of freighter aircraft operating costs, the inverse relationship between operating costs and aircraft size, and the downward trend in operating costs brought about by technological progress in aircraft design. With the Boeing 707-320C the point appears to have been reached where all-cargo flights can be made economic on long-haul routes.

17 Appendix 5 shows that each 100 per cent increase in aircraft size leads, broadly, to a 20-25 per cent reduction in cost per capacity ton mile (CTM). It also demonstrates the reduction in cost per CTM arising from an increase in stage distance up to the designed range of the aircraft: here again the difference can be of the order of 20-25 per cent. These two factors are largely outside the control of day-to-day airline management. The third, a high load factor, is difficult to achieve however much airlines try to deal with uneven traffic flows and seasonal variations. An associated aspect of this problem is volumetric capacity: with an average density of cargo of under 10 lb per cu ft, some aircraft will be full before the maximum weight payload is achieved and this problem is considered in the discussion of rates in Section V.

18 One cost altogether outside the airlines' control is landing charges. The British Airports Authority (BAA) have made available recent comparative tariffs at various international airports for various aircraft. It must be stressed that, with so many different methods of charging, an accurate comparison is not possible; nevertheless the figures do give a broad picture.

19 Two main points emerge: first, the landing fee itself at the BAA airports (Heathrow, Gatwick, Stansted and Prestwick) and many other airports in the UK is high by international comparison. Total charges, including the gallonage charge on fuel uplifted, for a Boeing 707 on a transatlantic flight are higher at Paris and Stockholm, but lower at Copenhagen, Amsterdam (Schiphol) and New York (Kennedy). The UK Government has been in advance of many others in progress towards the full recovery of costs at international airports, and, as a state corporation, BAA is under a statutory obligation to pay its way. Low airport charges can be due to the deliberate subsidy of transport facilities by governments and, if we feel unable to argue such a policy for the UK, we must nevertheless emphasize the great importance of containing or reducing such charges if London is to remain a gateway to Europe in the 1970s.

20 The second point lies in the structure of the airport charging system. In continental countries and at New York the charges include not only a landing fee but also a charge for each passenger and a fuel levy (in some continental countries there is an additional charge for lighting). At BAA and many other UK airports, where the passenger service charge has been abolished, there are only a landing fee and an air navigation service charge, paid equally by passenger and freighter aircraft. The following table illustrates the comparative figures for a Boeing 707 on a transatlantic flight.

21 From the table it will be seen that the charges levied on freighter aircraft at UK airports are high by international standards, although the difference is smaller in the case of short-haul flights which do not attract the intercontinental surcharge levied in the UK. Moreover, airport charges are a significant cost to the airlines, taking 7½ per cent of BEA's total operating costs in 1965/6 and 5 per cent of BOAC's. We are concerned that this high level of airport charges for freighter aircraft may discourage the use of UK airports by freighters and

that the growth of air freight in the UK may suffer, especially from the point of view of entrepot traffic. We therefore urge BAA and the other charging authorities to re-examine their charging policy with this in mind.

Table 4/E

	<i>UK</i>	<i>Paris</i>	<i>Amsterdam</i>	<i>New York</i>
Landing fee	165.8	84.1	77.5	35.2
Passenger service charge at 60 per cent pay load	—	177.3	72.5	84.0
Air navigation service charge	38.5	—	—	—
Fuel levy	—	21.3	15.2	31.5
Total	204.3	282.7	165.2	150.7
Total less passenger service charge	204.3	105.4	92.7	66.7

Ground operating costs

22 Ground operating costs comprise terminal handling and documentation, sales advertising, accounting and administration. These can be influenced to a substantial degree by the policies and efficiency of airlines and by the size of packages and consignments handled. Unfortunately, it has not been possible to obtain realistic ground-cost figures from the airlines on anything like a comparative basis. There are two reasons for this: as long as a significant share of cargo goes in passenger aircraft, separation of costs will be, at best, on an arbitrary basis; and the airlines of the world tend to be too busy dealing with expansion of business and technical developments to isolate the vital individual cost factors in their freight operations. From discussions in the USA, it is apparent that airlines in the USA are no better in this respect than those in the UK and on the Continent. We would, nevertheless, urge British airlines, especially BEA and BOAC with their considerable resources, to intensify the studies which they have made in this field; only then can potential economies be identified and a structure of charges evolved which relate the costs incurred. This will become even more important, as far as terminal handling at Heathrow is concerned, when the new cargo terminal is operational at the beginning of 1969.

23 It has not proved possible to establish reliable figures of the costs of handling cargo through air terminals. They depend on many variables such as whether freighter or combination aircraft are used, the size of aircraft, the size of package and consignment, the degree of preparation off the airport and the extent to which the operation is subsidized. Nevertheless, the figures quoted to us have been of the order of £12-£15 a ton which suggests that there should be considerable scope for economies.

24 The main saving on ground costs seems to be obtainable from larger and unitized consignments. Mr R Stoessel, an adviser to Lockheed, has done intensive research on this subject and the following table shows part of his results:

Table 5/Comparison of indirect operating expenses for two different air cargo operations involving the same annual traffic volume/5

	<i>For 200lb avg shipments of 5 pieces each</i>		<i>For 2000lbs avg shipments of 1 piece each</i>	
	<i>At 60% load factor</i>	<i>Fixed annual</i>	<i>At 60% load factor</i>	<i>Fixed annual</i>
Aircraft servicing		1,142,000		1,142,000
Traffic servicing, except:		585,000		585,000
Cargo handling labour	1,650,000		525,000	
Cargo documentation and control	1,238,000		124,000	
Servicing administration	968,000	195,000	218,000	195,000
Reservations and sales	540,000	300,000	108,000	60,000
Advertising and publicity	540,000		540,000	
Direct maintenance and maintenance burden— Ground property and equip.	504,000		414,000	
General and administrative	360,000	600,000	288,000	480,000
Depreciation—Ground property and equip.	270,000		216,000	
	6,070,000	2,822,000	2,443,000	2,462,000
Totals	8,892,000		4,895,000	

Assumptions:

- (i) 150,000 tons annual lift for 1200 st miles avg distance at 60% avg load factor
- (ii) 800 st miles avg flight distance.
- (iii) 50 ton capacity aircraft with 260,000 lbs max land wt.
- (iv) 300,000,000 annual available ton miles 180,000,000 annual realised ton miles.
- (v) 7500 annual departures.

The table shows that total ground costs per ton can be cut by 45 per cent when single-piece 2000 lb consignments are handled instead of 200 lb consignments consisting of five pieces. The labour costs of handling would be reduced by two-thirds, and the cost of documentation and control, which is essentially a cost per consignment, by as much as 90 per cent. Moreover, the greatest benefit from this consolidation accrues from the initial stages: after consignment sizes of 500 lbs have been reached, the rate of saving tapers off. These figures have been projected to gauge their effect on flights of different lengths and at different load factors and rates, but they represent once-for-all terminal savings and should be reflected in charges as absolute discounts unrelated to the length of the flight

rather than percentage discounts on the freight rates. Handling costs are affected by package sizes; documentation and control costs by consignment sizes. The present consignment sizes being achieved are, on average, between 150 and 200 lb made up of 4 or 5 packages, with slightly larger consignments on North Atlantic routes. There is, therefore, considerable scope for savings by larger packages and consignments.

Conclusions

UK airports should re-examine their policy for landing fees in view of the level paid by freighter aircraft in the U.K., which is high by international standards.

In view of the lack of reliable statistical data with which to isolate the various elements in ground-handling costs, airlines should intensify their studies in this field so that these costs may be reduced and a keener structure of charges evolved.

The changes that are taking place

V Consolidation into unit-loads

25 It is necessary to draw a distinction between the various processes which are on occasion called consolidation. Firstly, there is purely documentary consolidation, by which several different packages are combined on one waybill to make one large consignment; secondly, there is the physical consolidation of packages into containers or pallets, also called unitization; and, thirdly, there is the function performed by the shipping and forwarding agent as a consolidator of goods, who unitizes the goods of several exporters and obtains discounts from the airlines for his containers. This section deals with the second process of physical consolidation into unit-loads, or unitization.

26 It is doubtful whether the potential cost savings arising from the unitization of loads have been fully appreciated by the airlines of the world. International rates are set by the International Air Transport Association (IATA) whose role is considered in Section VIII. IATA, recognising the importance of unitization, established in 1963 a Container Board to set standards and agree rates for containers and pallets. It has now approved a series of containers compatible with the main aircraft types, though it has so far left pallets alone. It has also agreed on a discount for all approved containers of 12 per cent or, on some routes, 10 per cent. This discount is unsatisfactory both because it is a percentage discount on the freight rate instead of an absolute discount as argued above, and because it has proved inadequate as an inducement to agents and shippers to put their goods into containers. Work is at present in progress to change the system whereby each article in a container is charged for separately. The present system of a discount on the aggregate of all the rates in a container is complicated and effectively limits consolidation to commodities.

27 In our opinion, British airlines should use all their influence at IATA to obtain realistic amendments to the rate structure based on the actual savings obtainable from unit-loads. These could take the form of higher breakpoints in the tariff structure, discounts related to the actual savings obtained by unit-loads, and a system of selling space rather than weight on the aircraft so as to achieve the best ratio of weight to space. Such a policy is made necessary by the change of emphasis from belly-hold to all-freight services.

28 Apart from the routes on the North Atlantic and from the UK to certain Far East destinations, where there are breakpoints up to 500 kg (1100 lbs), there is only one breakpoint, at 45 kg (100 lbs). There is a pressing need for higher breakpoints on these other routes to encourage unit-loads, although it may be that breakpoints higher than 500 kg would be uneconomic.

29 An example of the kind of charging policy wanted for containers is provided by the American type D container used for domestic traffic; this has a capacity of 62.5 cu ft and 2000 lbs and there is one of similar capacity in the IATA programme. The American shipper gets a tare weight allowance of 62 lbs, a terminal handling reduction of 35c (2/4d) per 100 lb and a reduction of 33.3 per cent on the general commodity rate for excess over 536 lb. We welcome moves in this direction at the IATA cargo conference in April 1967.

30 This reduction on the freight rate is called a density incentive and highlights one of the difficulties experienced by airlines, that the space in an aircraft may be used up before the maximum weight is achieved. On average the density of consignment is under 10 lbs per cu ft. Mr Stoessel has calculated that, up to about 12 lbs per cu ft, the airlines should sell space rather than weight, that is to say a fixed rate for containers with an additional weight charge above a certain point.

31 The use of containers in air freight, as in surface, presents problems about the capital cost of ownership and full utilization. Yet the American type D container, which is a good example of a container suitable for both belly-hold and all-freight aircraft, is designed for five round trips and only costs 20\$ (£7 3s), and disposable pallets are being developed which should cost less than 10s. Although the large and expensive 8 ft x 8 ft end-profile containers will come into use in the air in the early 1970s, the main savings in unit-loads are likely to continue to lie for the next few years, as explained above, in smaller and cheaper containers and pallets. The traffic-flow problem presents difficulty but, if the container and pallets represent little capital, they can more easily afford to lie idle for some time. Flow is, of course, a problem for aircraft as well as containers and the airlines are feeling towards such solutions as pools and circular routing.

32 Space limitations at airports and greater awareness of the benefits of unitization, coupled with the problem of lorry control, are likely to lead to a great deal of the grouping of loads away from airports. It is expected that a countrywide network of inland clearance depots (ICDs) will be set up over the next three years and these will serve air as well as surface freight. It is considerably more expensive to prepare cargo for loading at for instance Heathrow, than to perform a similar function at an ICD. Land at Heathrow is very valuable and rents correspond; more important is the economy of scale and optimizing of methods which can be achieved in a depot whose design is devoted wholly to handling. By relieving airports of much of the work attached to consolidation and customs clearance, ICDs can perform a useful role in the reduction of costs. It must be recognised, however, that there is in practice a limit to which consolidation for air freight can go. Consolidators working to a despatch schedule cannot always wait to fill the larger containers, and for short journeys, especially to the Continent, the delay due to consolidation can outweigh the cost benefit.

33 Present ground rules for ICDs agreed between the British Shippers' Council and HM Customs and Excise only allow for containers of a minimum of 200 cu ft. There is a need to reduce this ceiling to take account of the standard containers suitable for air freight: a limit of 30 cu ft is recommended for standard

IATA containers. BEA has suggested that parcels not in containers should be allowed into ICDs for customs clearance. This does not fit the conception of ICDs as places where bulk is broken or assembled, and it is doubtful whether ICD operators would be interested in this sort of traffic, initially at any rate. Nevertheless it may be realizable at a later stage if the airlines themselves establish such facilities outside the airports. Given the required measure of physical security, no difficulty is foreseen in obtaining customs approval for the movement of containers between airports and ICDs.

34 At the moment the absence of off-airport consolidation has caused a major problem of lorry congestion at Heathrow. Owing to the large number of flights from Heathrow, cargo is attracted there by road from as far away as the north of England. The reception of so many lorries, all tending to arrive late at night and within a short time of each other, leads to delays and frustrations. The makeshift arrangements which have existed for some time at Heathrow have aggravated the situation, but there are two ways by which an improvement can be effected, while maintaining provisions for such freight as mail and newspapers on a tight schedule, which has to be brought late at night. The new cargo terminal will revolutionize the situation and it is important that it should be able to take every advantage of the developing freightliner system. Secondly, the congestion of lorries at Heathrow must be reduced, perhaps by an appointments system, or by any other means which would achieve a greater regularity and spread of arrivals. Road or rail feeder services of this kind could be operated in partnership with the airlines by British Railways, the road hauliers or the forwarding agents, an example being the service started by BEA from Birmingham. The physical consolidation of loads would ease the situation by reducing the time taken by a lorry to unload.

35 A specific point in this connection is the routing of traffic from the M1 to Heathrow. Eventually the M1 will continue down to the North Circular Road, by which the M4 is easily reached. At present it is necessary to take a route which is devious and poorly signposted. The Greater London Council and the Ministry of Transport have been slow to provide adequate signposting and it is hoped that there will be no further delay in providing this.

Conclusions

As the main savings in ground costs lie in the elimination of the individual handling of small packages and consignments, airlines should encourage their consolidation into larger physical units and consignments, whether on or away from airports.

In order to achieve this, British airlines should use their influence at IATA to obtain realistic amendments to the rate structure, based on the savings obtainable from unitization. These should include weight breakpoints at higher levels on routes other than the North Atlantic (and for certain Far East destinations) and absolute discounts for each container rather than percentage discounts on the freight rate.

Consideration should be given to greater emphasis on selling space in aircraft rather than weight, up to a certain density of cargo.

Agreement should be reached to permit containers with a volume of less than 200 cu ft to use inland clearance depots for customs clearance.

The co-ordination of road and rail services with Heathrow should be encouraged and, in particular, steps should be taken to reduce lorry congestion whether by an appointments system or other means.

Clear and adequate signposting should be urgently provided between the M1 and Heathrow.

VI Customs and documentation procedures

36 Appendix XVI of *Through Transport to Europe* contains a full discussion of customs and documentation procedures for both air and surface freight. It notes three factors, peculiar to air transport, which contribute towards the speeding up of import formalities. Firstly, in about one third of all cases, the carriers act as clearing agents: the proportion will be somewhat higher in the case of foreign airlines, which prefer to be their own agents. Secondly, the transit shed register for low value consignments and the triplicate entry system have done much to expedite clearance, even though they do lead to an increase in documentary work: we welcome the recent extension of the transit shed register for consignments of up to £50 and note that HM Customs are looking at proposals for those up to £100: there has been a recent experiment to modify the triplicate entry procedure and an improvement is expected here too. Thirdly, air waybills and invoices normally arrive with the goods to provide evidence of description and value for customs declarations. The air waybill adopted by IATA comprises three originals and nine copies in a standard set, but to extract full benefit from it the waybills used must conform to the prescribed standard. The waybill does not match standard surface documents but is being revised so that it can be used with automatic data-processing machines: there is also an attempt being made to marry it with the Customs form XS29 (for the collection of statistics) but there are considerable problems of layout to be overcome.

37 HM Customs are currently engaged in discussions with the airlines at Heathrow on the possible applications of electronic data-processing to the handling and clearance of air freight. These discussions are rightly being conducted in great detail with a view to working out the best and most simple system. If an electronic data-processing system proves feasible, its actual introduction will need further intensive work but it could eventually reduce considerably the comparatively high costs prevailing.

38 One cause of delay to imports is undoubtedly the complication of the UK tariff structure. This subject is being dealt with elsewhere in the work of the Movement of Exports EDC. The introduction of automation may provide an opportunity for some simplification.

39 Delays of goods at airports can also be due to the absence of staff outside normal working hours. HM Customs are prepared, on payment, to match the staff provided by airlines. The root of this problem lies with certain agents and importers who, frequently because of small staffs, are unable to provide a whole-time service. This is one argument for the rationalisation of agents. One solution is to charge demurrage for goods not collected within, say, two days. But no one airline is prepared to court unpopularity by doing this and there is a need for an agreement at, for instance, Heathrow for all the operating airlines to impose this.

40 During their visit to New York members of the working party were interested by the attitude of US Customs towards physical control. The practice is to bond all international and domestic carriers, agents, brokers and major importers and, having obtained a large financial guarantee with the automatic imposition of stiff penalties in the event of default, to dispense with physical security to a great extent. Thus there is free movement of goods under bond between distant parts of the same port or airport. We would welcome a thorough assess-

ment by HM Customs and the relevant commercial interests of the advantages of a system which combines strict financial sanctions with easier physical control. The application of this to airport terminals and entrepot trade is discussed in section X.

41 Another US practice is the employment of an integrated staff over clearance of baggage and cargo. We understand HM Customs have embarked on a review of the whole structure of their field organisation which will include consideration of the advantages, disadvantages and feasibility of integrating, either completely or partially, the separate branches now engaged on baggage and cargo work. We welcome this, while recognising that a study of this scope must take some time to complete.

42 Observation of the time taken to clear import consignments at Heathrow shows, on limited samples, that the majority are cleared and delivered within 3 days for short-haul and 5 days for long-haul but that there is a tail, up to 17 days for long-haul consignments. Setting aside this tail, these delays mean the loss of much of the time advantage of transporting by air; analysis of the consignments concerned shows that the actual customs procedures are in nearly every case carried out expeditiously and that delays are incurred by the slowness of the importer or agent in supplying instructions or collecting documents. Where an importer's business does not warrant standing instructions for clearance, advice of a consignment's arrival should be given by telephone or teleprinter, so that instructions for clearance can be obtained at once. Written postal advice is bound to lead to delay and has largely been eliminated on the Continent. This use of telecommunications is a striking feature of both air and surface operations in the USA in passing information forward and back at all stages of the progress of consignments. More should be made of telephone and teleprinter with a view both to eliminating delays at airports and to improving the reliability of the flow of goods. The transmittable air waybill recently agreed at IATA will help this. There is scope for the airlines both to pinpoint the causes of delay more accurately and, through their publicity, to persuade agents and importers to the wider use of telecommunications.

43 It is impossible to over-emphasize the importance of smooth documentary and customs procedures. In a survey carried out by the Manchester Chamber of Commerce and the Royal College of Advanced Technology, Salford, speedier customs clearance was shown to be a more important consideration with importers in their choice of airports than regular air or good delivery services and second only to the location of the airport.

Conclusions

Air waybills should conform more exactly to the standards laid down at IATA.

Airlines should co-operate in levying agreed charges for demurrage.

HM Customs and the commercial interests concerned should give careful consideration to the possible advantages of the system obtaining in the USA where financial bonding of suitable carriers and agents reduces reliance on physical security.

We welcome the review of the structure of their field organisation embarked on by HM Customs.

More use should be made of telephone and teleprinter for advising on the arrival of consignments for import and, in general, for passing information forward and back on the progress of consignments, to both agents and shippers, and this should be encouraged by the airlines.

VII The handling and carrying of air freight

44 This section deals with the physical processing of cargo in containers and pallets, in handling systems and in the aircraft.

Containers and pallets

45 Sections IV and V have dealt with the desirability of consolidating cargo into unit-loads and of recasting the rate structure so as to encourage this. A comprehensive system of interchangeable containers and pallets is slowly evolving. The aim must be to provide a through container or pallet for as much of the whole journey as possible. The variation of aircraft shapes and sizes points to a flexible system of unit-loads, with, for instance, small containers being loaded on to larger pallets. Road and air transport demand approximately the same standard of packing: it is the handling which determines how stringent this must be.

46 With the advent of the Boeing 747 and other aircraft designed to take containers of specifications laid down by the International Standards Organisation (ISO) —ie 8 ft x 8 ft end profile and lengths up to 40 ft—a new field will be opened up. Although cost studies have shown that the savings effected by documentation will allow for 15-20 per cent wasted space and weight due to the container, there is a need to develop containers which are light, strong and durable (perhaps from strengthened aluminium alloys) so as to gain the maximum cost advantage. But it is important to keep this development in perspective; so far only seven Boeing 747s have been ordered as freighters and it will be a long time before 40 ft containers are carried by air in any number. Their initial use by air is likely to be in emergencies or perhaps with regular large shipments when a manufacturer moving a large number of containers a year through an agent might negotiate the right to send an agreed proportion by air. In any event the smaller container and the pallet, whether netted or with a contoured roof (igloo), will remain the usual methods for some years. There is a pressing need for a pallet which will be fully interchangeable between different aircraft types, and it is to be hoped that its current development at IATA and by manufacturers will soon bear fruit. It is also important that the size of pallets used in cargo aircraft should be complementary to those used on the ground and that in the design of cargo aircraft this should be borne in mind.

47 In planning for unit-loads it is necessary to retain a good deal of flexibility. We welcome the development of a standard container programme by IATA but believe that this should include a smaller size than the current minimum of 61.75 cu ft: a standard container of half this size seems to be required. The programme should also include other forms of unit-load capable of top-loading. We also welcome the decision taken at the IATA cargo conference in April 1967 to embark on a thorough overhaul of their container registration programme: there appears to be a conflict between the standardization being achieved in the container programme and the great diversity of containers which has resulted from virtually unrestricted registration of containers by airlines.

Handling systems

48 We have seen and heard of a number of different approaches to the handling of goods in terminal buildings. These range from a roller belt to a highly automated system installed by FMC Inc in the Pan-American terminal at New York (Kennedy). We have also visited Dortch Inc, a leading designer of

handling systems, who are currently involved in the planning of 34 terminal buildings throughout the world: the emphasis in these systems is on flexibility and versatility. The only certain thing to be said is that at the present early stage of development it is not possible to pass judgement on the various methods. Each terminal will tend to be planned individually but through transport demands the maximum consistency of method. Accordingly the planning of terminals should transcend local considerations and accord as much as possible with the international systems which will be encountered. With the accelerating trend towards larger consignments, any airport with an interest in freight must instal equipment capable of handling containers and pallets, and a growth rate of at least 20 per cent a year for the next five years should be allowed for.

49 There is controversy as to how far efficiency can be increased by combining the handling operations of some or all of the airlines using an airport. Up to a point, which might be between 100,000 and 200,000 tons a year, economies of scale should be achieved in this way: when the traffic is much larger than this, such economies may reduce and the system become unwieldy. The airlines, being unable to compete in charges and rates, are unwilling to combine, as only by retaining their separate identities can they provide special services to their customers. The result may be that even the more efficient and cheaper handler could still reduce his costs by taking part in a unified system. H.M. Customs have consistently advocated a unified system on the grounds of general efficiency, particularly with regard to automation and security, and economy of customs manpower. It is not possible to make a blanket judgement on this issue: particular examples are discussed in Section X.

50 One argument advanced against a common import shed is that there is insufficient room for adjacent aircraft stands. But ultimately freighters are likely to be of such a size that they will have to be unloaded away from an import shed of whatever kind. Meanwhile, circular ramp loading systems, such as those designed by Dortch for Chicago and Frankfurt, providing an umbilical link to the terminal shed, go a long way to solving the problem. As with handling systems within terminal buildings, so are ramp loading systems still being perfected; these include hydraulic lifts and mobile docks which are effectively parts of the terminal building that can be moved right up to the aircraft.

Aircraft

51 We have not taken it to be within our terms of reference to survey the freighter programme of the British aircraft industry or to form an opinion as to which aircraft British airlines should invest in. We have, however, considered some general principles and have been most interested in the ideas put forward by the British Air Line Pilots Association (BALPA)—Appendix 7. BALPA is concerned that, with the exception of the Argosy, there are no aircraft, in current use or being developed, designed specifically as freighters, and submits that without full study of the requirements for such an aircraft, it will not be possible to obtain an adequate return on the investment either in the aircraft or in ground equipment.

52 Except for the Argosy, freight aircraft have certainly tended to be conversions of obsolescent passenger aircraft, which frequently lack the design features required to realise the cargo potential. The enormous sums needed in development make it highly unlikely that a purely freight aircraft would be economic: moreover running costs can be reduced with common main-
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tenance of similar aircraft. What can be considered, however, is the advantage of incorporating the specifications for freight at the initial stages of passenger aircraft design. Even though this may mean an increase in direct operating costs, in view of the tremendous potential of air freight, the airlines, when they give specifications to the aircraft industry, might find it well worth while to provide for the longer term needs of freight as well as passengers. As BBA points out in Appendix 8, the Argosy losses stem from the inadequacy of ground facilities, which is now being remedied, and the difficulty of obtaining a two-way traffic flow, which should lessen with the growth of air freight; the Argosy *per se* has produced a reasonably satisfactory operation. We urge that ways should be sought to reconcile the competing interests of passenger and freight transport without a prohibitive financial penalty, and indeed we believe that this may be achieved with the Boeing 747, the first passenger aircraft whose basic design has been combined with freighter considerations. The wide cross-section, instead of a double deck, was incorporated partly so that the freighter version would be able to accommodate, side by side, two containers of 8 ft x 8 ft x 40 ft dimensions.

53 With the advent of the Boeing 747, there is a need for a complementary short-haul aircraft capable of taking 150 containers. The projected European airbus may fulfil this requirement but, whether it or another aircraft is adopted, it is important that no further delay is incurred, in view of the services to and from Europe which centre on Heathrow, and the benefits accruing to the UK from its establishment as a major entrepot port.

54 An advantage of the freighter aircraft, brought out in the BALPA paper, is the greater integrity of the cargo, that is to say the security and safety of the load. At present the line of responsibility between the manufacturer and the operator of the aircraft is not clearly drawn and the responsibility of the captain is broadly defined. With a view both to the integrity of the cargo and the greater standardisation of equipment, airworthiness requirements may need reconsideration by the aircraft manufacturers, the airlines and the Air Registration Board, and there may well be need for similar action at the international level, especially for standards for the carriage of inflammable materials. There is also a continuing need to review regulatory provisions and the practices of operators as the use of all-freight aircraft increases and a wider range of goods is carried by air. The captain is responsible for more than the weight and centre of gravity of his load; the actual loading practices of the aircraft should be to his satisfaction. An internationally agreed system of coloured labelling would be of help in loading and unloading aircraft where there are language difficulties. It is important that the updating of regulations should keep pace with the expansion of all-freight services.

55 An interesting current development is that of the quick-change aircraft which is used in turn for passengers and freight or a mixture of both: this is facilitated by the use of the interchangeable 88 in x 108 in pallet. It works well on domestic routes in the USA and enables the aircraft to be used by day as well as night. Its application seems limited however, to the interim stages of new freight routes.

Conclusions

There will be a need for light, strong durable containers to 150 specifications particularly for use in jumbo jets.

There is a need for a pallet fully interchangeable between different types of aircraft and for air pallets to correspond with those used in surface transport.

The standard IATA container programme should be rationalized to consist of fewer types but should include smaller sizes than the present minimum of 61.75 cu ft and other forms of unit-load capable of top-loading.

Airport cargo terminals, although planned individually, should accord as far as possible with the international handling systems which will be encountered.

Airlines and the aircraft industry should give careful consideration to the claims of cargo in the initial design stages of aircraft destined for both passenger and cargo use.

In the development of new passenger short-haul aircraft, careful attention should be given to allow a freighter version capable of carrying 180 containers of 8 ft x 8 ft end profile.

Airworthiness requirements in respect of cargo and the responsibilities of the aircraft manufacturer and operator should be continually reviewed to keep pace with the expansion of all-freight services.

Regulatory provisions and operator's practices should be continually reviewed in the light of the increasing use of all-freight aircraft and developments in the characteristics of air cargo.

The influence of change on the operators and airports

VIII Airlines

56 The development of air freight to and from the UK involves overseas as well as British airlines and, although the latter rightly tend to have the largest shares of the traffic, there should be no discrimination against overseas airlines. The competition which is more difficult to assess is between airports rather than airlines in the international context. We have had discussions with the British corporations, BEA and BOAC, and with independent airlines, as well as hearing the views of overseas airlines during our visits abroad. Many of the topics discussed, notably costs, consolidation and airports, are dealt with in other sections.

57 BEA's paper, Appendix 8, mentions a number of these and makes the particular point that a fleet of freighter aircraft cannot be made profitable if the route pattern required to sustain it is fragmented by the award of licences to other British operators. This opinion is expressed forcibly and is in direct contrast to the view of the independent airlines that the growth of air cargo is being inhibited by the licensing system, so much so that we thought it right to invite the Air Transport Licensing Board (ATLB) to set out its views and policies in regard to freight and these are given in Appendix 9. The ATLB draws attention rightly to the importance in a public transport system of reliability, continuity and a sound economic basis to the economy as a whole, and not only to air transport operators and a number, larger or smaller, of would-be users of a proposed service. It describes the liberal policy it has adopted for charter services and for such tariffs as are not under the control of IATA and it stresses its complete impartiality as between the corporations and the independent airlines. The decisions reached by the ATLB on freight services appear to us to be reasonable. We are aware, however, that the ATLB's decisions on passenger services have important consequences on the carriage of freight in belly holds and that in making these decisions a difficult balance has to be struck between avoiding on the one hand the fragmentation of national effort, particularly on

international routes subject to competition by other international carriers, and on the other giving reasonable encouragement to independent airlines. We accept that a certain amount of protection is necessary. While this topic, of the utmost importance to civil aviation as a whole, lies outside our own terms of reference, we nevertheless feel it right to ask whether in the domestic rate structure more could not be done to assist both independent airlines and the corporations.

58 The bilateral negotiation of international traffic rights has led to co-operation between the airlines of different countries in establishing commercial partnerships to achieve greater traffic density, and the BOAC—QUANTAS—Air India partnership on the Far East route is a successful example of this. The arrival of jumbo jets will enhance the importance of this trend, as it becomes economically attractive to thicken trunk routes and, indeed, other routes which may become trunk routes.

59 IATA has displayed shortcomings both in its rating structure and in the awareness shown of the interests of parties other than airlines; for the latter the British Shippers' Council is a suitable body for consultation, and the problem of shipping and forwarding agents is discussed in Section IX. Until recently, cargo was treated at IATA conferences as a by-product of passenger transport: now separate cargo conferences are held. In the past cargo rates, such as the 12 per cent container discount, were fixed by informal bargaining, often as a quid pro quo in return for some concession on passenger rates. The April 1967 conference brought some moves in the right direction. We hope that British airlines will continue to press for a rate structure based on what BEA describes in its paper as 'rate rationalization, consolidation and containerization'.

60 There are many signs that airlines throughout the world are coming to regard air freight as an important occupation in its own right and no longer merely as a by-product of passenger transport. We have been impressed, also, by the thought and expertise which is going into the development of air freight by the airlines of this country, particularly by the national corporations, BEA and BOAC. It is clear that air freight is going to increase in significance within an airline's operation over the next ten years, and it is important that BEA and BOAC should be organised in a manner best suited to meet this trend. Increasing concentration of management skill and cost control on freight will be needed, and we expect that they will continue to receive appropriate attention by both corporations. Naturally this is a continuing matter of study in any management and it may be that the establishment of air freight divisions as separate profit centres will become desirable in due course. The present advantages accruing nationally by virtue of the specialization of BEA and BOAC as long-haul and short-haul carriers are powerful; nevertheless freight might well present an area of great potential co-operation. We certainly think that in the corporations there is a case for considering the establishment in each of a freight division which is the specific responsibility of an executive board member, for if manufacturers are being encouraged to pay more attention to freight problems at board level, it is equally appropriate that the same course is urged on operators of services.

Conclusions

The decisions of the Air Transport Licensing Board in regard to all-freight services achieve a reasonable balance between the economic factors involved, but the importance of air freight in the licensing of passenger services should be recognised.

British airlines at IATA should press for amendments to the rate structure based on a realistic appraisal of the relevant cost factors.

In view of the increasing importance of air freight, British airlines should consider the establishment of separate freight divisions, thus giving relatively more emphasis to freight at senior management levels.

IX Air freight agents

61 The role of the shipping and forwarding agent is twofold. His traditional function is to provide a link for the exporter and importer with all the appropriate airlines and vice versa, in addition to functions such as documentation and customs clearance. He can, however, provide much more than this as a consolidator or through-transport organizer or both: he can run a groupage service with a consequent saving in cost and closer control over the goods during the journey, and he can offer services for a combination of air, land and sea, by having a reliable network of overseas correspondents or his own offices abroad. Combinations of air, land and sea are a solution being adopted by an increasing number of shippers. Growing expertise on the part of shippers and a tendency of foreign airlines operating in this country to perform agency functions themselves suggest that the emphasis for the air freight agent is shifting from the traditional function to that of a consolidator and through-transport operator.

The customs and clearance function

62 We have had discussions with the National Air Section of the Institute of Shipping and Forwarding Agents (ISFA) and have considered the problems facing air freight agents in this country. Some of these are set forth in a memorandum submitted to us by ISFA (Appendix 10).

63 The main point made by ISFA concerns their relations with IATA. IATA is composed solely of airlines and its primary function is to reach agreement on airline rates and conditions. It is inevitable that matters affecting the livelihood of agents should come up and it is a complaint of the agents that being unrepresented at IATA they are not told of the resolutions affecting them before they are adopted at IATA or even of resolutions already passed but not yet ratified by member countries. The agents have already had discussions with BAA, BOAC and government departments on this question of consultation, and we welcome evidence that machinery is being set up whereby British airlines hold consultations with ISFA before IATA conferences at which the interests of agents are likely to be affected, and government departments take into account the views of agents before ratifying IATA resolutions which affect agents.

64 There are three particular subjects on which the agents feel their case has not been properly heard. The first is the penalty, often the withdrawal of the IATA licence, which can be applied to agents who charge freight at a rate different from that laid down by IATA, no distinction having been drawn between deliberate contravention and honest mistake, with the consequence that agents have risked having their licences suspended. This injustice has been recognised at IATA and the procedures for dealing with mis-freighting are under consideration. The second is the ruling that agents should no longer be allowed cages in airline sheds: this subject is dealt with in the discussion on airports in Section X. The third is the abolition of the differential charge hitherto enjoyed by agents for the handling of goods on and off the airport; although this method of remuneration was in some ways unsatisfactory, the agents have been faced with its abolition and consequent loss of revenue without being given any opportunity

of suggesting alternatives. Further discussions should be held between agents and airlines to find an equitable solution.

65 The problems of the agents in regard to IATA point to the need for a strong central organisation to speak on the agents' behalf. While the National Air Section of ISFA has done useful work in this respect, it does not appear to have the prestige, the support or the resources needed for fully effective action at national and international level. At present ISFA has not only been unable to secure the rights of its members; it has also no power to regulate the activities of a fragmented and diverse industry. Although some of the smaller agents are among the best, there is considerable scope for rationalization. Impetus towards this can certainly come from the Agency Investigation Board of IATA, which controls the issue of IATA licences to agents, but this is far from satisfactory as the Board operates in secret and the agents have no influence on the criteria used. All the important air agents, except one American company, are represented in ISFA; it would be in their own interests if they were to build up their institute into a more influential body.

The consolidation function

66 In section V attention was drawn to the inadequate discount allowed on goods shipped in containers. A realistic discount, and higher breakpoints outside the North Atlantic routes would encourage agents in their role as consolidators. The view has been put to us that traffic might become concentrated in the hands of one or two consolidators who would have too much power over the carriers and would tend to divert traffic away from direct provincial services; in West Germany for instance, there is a central agency consortium and smaller firms can only act as sub-agents. Too much centralisation might lead to a loss of sales outlets. Although these fears are understandable, we believe that the airlines should look carefully at the possibility of higher breakpoints; they will want to strike a balance between the nuisance of small packages and the undue dominance which might attach to one consolidator, but, with the rate of growth of air cargo, it should be possible to increase them.

67 Agents could do a great deal in co-operating in feeder services from the provinces to Heathrow. An airline service can certainly play a part but agents will want to retain some flexibility of timing. Co-operative lorry services would help large agents from areas where comparatively little traffic originates, such as the West Country, and small agents from all areas. They would also relieve congestion at Heathrow and it is to be hoped that they will be developed.

Conclusions

We welcome the setting up of machinery whereby British airlines hold consultations with ISFA before IATA conferences at which the interests of agents are likely to be affected and government departments consult ISFA before ratifying IATA resolutions which affect agents.

Discussions should be held between agents and airlines to find an equitable means of remunerating agents for the handling of goods on the ground.

Shipping and forwarding agents involved in air freight should build up the prestige, support and resources of ISFA, particularly so as to strengthen its National Air Section.

Agents should seek to rationalize the structure of their industry so as to provide a more comprehensive service at home and abroad.

Discounts on containers and weight breakpoints should be framed so as to

encourage physical consolidation, particularly on dense traffic routes.

Agents should co-operate in providing consolidated rail and road services from the provinces to Heathrow.

X Airport development

68 The development of the correct number of properly designed airports with adequate and efficient facilities is vital to the optimum growth of air freight. There is no forum for discussing investment in airports for freight in the U.K. as a whole nor for considering the development of air services, and a pattern has emerged of a number of provincial airports equipped to a greater or less degree for handling freight. Heathrow occupies the dominant position nationally with about two-thirds of the total traffic, while Gatwick and the third London airport will relieve the pressure on Heathrow as the latter reaches saturation point. The suggestion has been made of an all-freight airport. A large proportion of freight will, however, continue to be carried in passenger aircraft which will make the separation of passenger and freight facilities difficult; furthermore the broad pattern of passenger services by day and cargo services by night means that more intensive use can be made of an airport which accepts both. Nevertheless, there may be room in the years ahead for a predominantly freight airport, with the minimum of expensive passenger facilities, in the midlands or the north of England. We welcome signs that this idea is being carefully scrutinized, emphasizing the need in this context for reliable information on the origin and destination of air freight.

Provincial airports

69 It is difficult even to suggest the number of airports which will best meet the requirements of long-haul and short-haul freight traffic respectively. Many provincial airports are owned and operated by municipal authorities. On the one hand an economic appraisal would lead to the conclusion that a strictly limited number of airports are desirable if all-freight services are not to become fragmented; on the other hand municipal pride, the convenience of passengers and the peculiar situation in Scotland all pull towards a larger number. Once an airport exists, the claim is made that it might as well be used for freight in addition to passenger aircraft, relatively few additional facilities being needed for the size of freighter at present in use; any attempt to stop the development of a particular airport should be made before the capital is committed to the basic facilities. Some clear thinking is needed on this whole subject with a view to avoiding the wasteful duplication of regional facilities and yet at the same time meeting legitimate regional needs.

70 The minimum all-freight service which is economically justifiable from one airport to one destination is generally agreed to be one flight a day or perhaps five a week. Admittedly operators cannot be expected to achieve this level at once but it does represent a measure which should be achieved before a rival service is set up from a relatively close point, on the assumption that a regular and frequent service is what is required by the customer as well as being a prerequisite of the orderly expansion of air freight. Such a standard would suggest three long-haul (principally trans-Atlantic) airports, Heathrow, Manchester and Prestwick, and eventually up to seven short-haul airports serving Europe—adding the Birmingham area, the east midlands, the Newcastle area and South Wales to London, the north-west and Scotland. Airports in these and other

areas will, in addition to providing fast, direct services to European, and in some cases, intercontinental destinations, have a separate role as feeders to the principal airports, primarily Heathrow, although lorry feeder services are almost certainly more economic for relatively short distances such as from the midlands to Heathrow.

71 Visits have been paid by members of the working party to Manchester, Glasgow (Abbotsinch) and Prestwick. The first two are both good examples of well-run municipal airports. Manchester has been built up over the past fifteen years into an important international airport, which has projected a rise in freight throughput from 26,000 tons in 1965 to 250,000 tons in the early 1970s. The airport authority has plans for a new cargo terminal with a communal import shed operated by the authority. Manchester will grow in importance for both long-haul and short-haul traffic and it may eventually develop as an entrepot port. The acquisition of land may present some difficulty and we hope that this can be overcome. It is pertinent that Liverpool has announced an enquiry to determine whether to expand its airport to receive jumbo jets: in the light of its proximity to Manchester, it seems to us that there would have to be compelling reasons to justify the large capital investment required.

72 The proliferation of airports in central Scotland, Prestwick, Glasgow (Abbotsinch) and Edinburgh, is illogical, but with recent investment in the first two, particularly Abbotsinch, there seems little to be gained today from questioning this afresh. Freight is passing through Abbotsinch at an approximate rate of 20,000 tons a year: there are two bonded handlers, BEA and a consortium of agents, and with its modern facilities it should prove attractive to short-haul traffic. There are surface links with Prestwick but the fact that the long-haul and short-haul functions are divided between the two lessens the attraction of either for entrepot.

73 The present cargo-handling facilities at Prestwick are recognised to be unsatisfactory. An interim shed is being built with three Customs bonds among six airlines. There is a long-term plan to build on the Orangefield site, which could accommodate a terminal building of 500,000 sq ft, and there appears to be both space and time for arriving at the best possible form of development. The cargo throughput is at present 10,500 tons a year and, although this is currently growing at 40 per cent a year, the argument put forward by HM Customs for a single bonded shed seems conclusive. Some of the operators, including BOAC, which has half the traffic, have agreed to this, but some of the foreign airlines are keen to preserve their identity by having their own sheds. We urge BAA to stand firmly by the recommendation of HM Customs and the controllers of over half the traffic, and, if necessary, to make a survey of the flow problems involved with a view to persuading the airlines into a unified system. There is every indication that the dissenting airlines will not leave Prestwick if a communal shed is decided upon: the argument that airlines have to be propitiated to keep them at Prestwick has little validity as most of their cargo is for local destinations.

London

74 London is to be served by three major airports, Heathrow, Gatwick and Stansted. It seems likely that, at least for the next ten years, Heathrow will remain pre-eminent as far as freight is concerned. Nevertheless as saturation approaches, speeded by restrictions on noise and night flights, the amount of freight diverted to the other two airports will increase and the problem of surface

links between them will grow correspondingly. Serious attention will have to be paid to routeing and signposting.

75 Heathrow has for some years been suffering from freight-handling facilities which are quite inadequate for the volume of traffic; a striking result of this is the piece-meal development which has been forced on BAA in the central area. In spite of this the airport management and the airlines, especially the national corporations, have succeeded in building it up into the UK's third port in terms of value of goods. Its position for both import-export traffic and entrepot trade has, however, been in growing peril and the building of a comprehensive cargo terminal on the south-west of the airport is urgently necessary. This terminal is now expected to be completed by the end of 1968: it is of national importance that this programme is met and that it becomes fully operational as soon as possible thereafter.

76 It is important to emphasise the urgency of this project and to recognize that any further delay caused by refinements to the plans would jeopardize Heathrow's position still further. We accept that some aspects of the scheme have been called in question and its history should be recalled if only to draw lessons for the further development of Heathrow and schemes elsewhere. Appendix 2 by BAA describes the history of planning by the then Ministry of Aviation from the report of the Air Freight Working Party in 1963, which recommended a unified import shed for all carriers. All the interested parties subscribed to this idea, although the independent airlines had reservations. Later on, however, in default of agreement on this proposition, BAA and BOAC asked for their own building and the independent and foreign airlines refused to combine in a second building, this being the position which faced BAA on coming into existence in April 1966. So it is that a joint export and import building for BAA and BOAC with interconnecting areas is now being built, with separate sheds for the independent and foreign airlines.

77 The other major problem is the position of shipping and forwarding agents, who have hitherto been allowed to have their own cages in the airline sheds. An IATA resolution, which is due to be implemented by August 1967, abolishes this system, and BAA and BOAC were parties to this decision. HM Customs has turned down an application from the agents for a separate bonded building on the south of the site. The agents claim that they will be unable to perform their functions properly and it is certainly true that their important function as consolidators will be impeded.

78 It is hard to unravel this complex story, which appears to lead to too many bonds for airlines and no bonds at all for agents, and it would be profitless to attempt to apportion blame between the airport management, the agents, the airlines and HM Customs. What can and must be done is to try to point towards a solution to the problems as they exist now. The number of airline bonds is really a matter for negotiation between HM Customs and the airlines with the airport authority holding a watching brief for wider interests. Certainly nothing can be done about the present plans; the general approach of an airport authority to this problem is discussed later.

79 As far as the agents' bonds are concerned, we are not inclined to recommend a reversal of the IATA resolution or a return to the cage system, which is unlikely to be compatible with the flow of traffic achieved by the advanced handling equipment which is to be installed. The refusal of HM Customs to sanction a separate bond was due to several factors: the physical security problem, the large number of agents and consequent waste of Customs manpower, and the

extra handling and documentation involved for all parties with a consequent deterioration of service to the importer. It has already been established in principle, however, that there should be a bonded shed for the reception of large rso containers when the jumbo jets begin to operate in the early 1970s. What is needed is an extension of this principle to cover the smaller unit-loads now obtaining. The key to the problem lies in consolidation. Those efficient agents who are providers of through transport services and consolidators should have bonded facilities and it should be perfectly possible to decide, by the control of bonds, the relatively few agents who might qualify for this. It is vital to the growth of air freight that consolidation should be encouraged, and the provision of a bonded shed for consolidators at the inception of the Heathrow terminal will do this; equally the absence of such a shed will set it back, and Heathrow's efficiency and attraction for both export and transshipment traffic will suffer in proportion.

80 We are convinced that such a scheme would be in the best interests of all concerned and that in the comparatively large unit proposed there would be no waste of Customs manpower. We also believe that a less rigorous attitude to physical security, on the American pattern, would be workable in this context, and the automated documentation now being evolved could well embrace such a development. As far as general efficiency is concerned, a solution on these lines would be popular with the consolidators, who would be prepared to reimburse HM Customs for any additional costs, and the encouragement of consolidation would certainly be to the benefit of shippers. We understand that HM Customs have for some time been prepared to give sympathetic consideration to a firm proposition from a body willing to set up and run a bonded shed, on or off the airport, for consolidators of unitized cargo, and we earnestly urge the relevant interests to work out a proposal on these lines as soon as possible so that such a shed may be completed without delay.

81 One further consideration in the planning of Heathrow is the maximum encouragement of entrepot or transshipment traffic. It is only at airports dealing with a large number of flights and services that this is likely to flourish and, although Manchester may eventually grow into an entrepot, port it is Heathrow which is nationally dominant at the present time.

82 Heathrow has a big advantage over its competitors for entrepot trade such as Amsterdam, Frankfurt and Paris in the greater range of flights and services it can offer, while the separation of BEA and BOAC also encourages foreign airlines to tranship through London. Against this must be set the inadequacy of the present cargo facilities, and the absence of official documentary requirements within the Common Market, which helps airports like Amsterdam. A study of the times taken for transshipment between BOAC and BEA at Heathrow shows that in only three cases out of seventy-four did delivery for onward carriage by BEA take more than four hours from the actual arrival of the incoming aircraft. The determining factor in total transshipment time is the frequency of onward flights and here Heathrow is at an advantage. The new terminal at Heathrow will materially help entrepot trade to flourish, enabling BEA in particular to reduce the cut-off time, the length of time by which the goods must be delivered to the airline to catch a particular flight. At the moment this is four hours, which with improved facilities should be cut to about one and a half hours. This is one of the many factors which continues to lessen the attraction of Heathrow until the new cargo terminal becomes operational.

83 The procedures for entrepot at Heathrow are undemanding: there is no

customs documentation and for off-line transshipments (from one air-line to another) the commercial documents are ready in one and a half hours. At present Customs require to seal cargo for off-line transshipments between remote sheds, but not for on-line (within the same airline): sealing will be dispensed with in the new terminal. Where a consolidator is handling the goods, the 'transfer manifest' system works satisfactorily. There is an exception, however, in the case of individual consignments from abroad for inclusion in an agent's groupage service, when a transshipment bond and sealing are necessary and goods have to be re-presented to Customs: the extra work and delay involved inhibit the consolidation at Heathrow of goods which could otherwise be brought from the Continent for groupage to destinations such as Canada and Australia.

84 Nevertheless, in general, Customs requirements for transshipment are reasonable, but we hope that a solution may be found for the particular problem of consignments from abroad. Any further relaxation in Customs requirements for transshipment would not only help the parties directly involved but would be a psychological aid to the promotion of Heathrow as an entrepot port. To this must be added the question of landing charges mentioned in Section IV.

British Airports Authority

85 Mention has been made of BAA's part in the development of Heathrow and Prestwick and it is convenient at this point to discuss briefly the role of an airport authority in airport planning. The task of planning a small or medium-sized cargo terminal, as at Manchester, Glasgow (Abbotsinch) or Prestwick is relatively simple. The argument for as few separate bonds as possible seems conclusive and it is noteworthy that the municipal managements at Manchester and Abbotsinch are both taking a firm line in leading airlines and agents towards this solution. BAA has the same object in view at Prestwick where a single bond is highly desirable.

86 The planning of a major terminal as at Heathrow is a different matter. Despite shortage of space at Heathrow generally, the cargo area is one of the world's largest. Present cargo throughput at Heathrow is over 250,000 tons a year, which is likely to multiply over the next ten years. Members of the working party have met the air cargo study group of the Port of New York Authority (PNYA), which is faced by similar problems at Kennedy airport, although there is less space-consuming international traffic, and have been impressed by the approach of PNYA to airport planning. PNYA undertakes a detailed study of the economic and physical factors involved, draws conclusions as to the best method of operating and, armed with this knowledge, seeks to persuade the airlines to adopt it. In the last resort the airlines have the right to do as they wish in the space allotted to them but only after careful discussion with PNYA. In the planning of Heathrow, urgency operated against any long drawn-out research of this kind and the situation was aggravated by the temporary responsibility placed on the Ministry of Aviation pending the establishment of BAA, which only came into existence in 1966.

87 Appendix 11 describes how BAA sees its role in relation to air cargo. It is plain that a careful course must be steered between the Scylla of acting merely as a landlord and thus allowing a free-for-all between competing interests and the Charybdis of adopting a dictatorial attitude which may drive operators away, or force them into systems not in their best interests, particularly as at present when so much doubt reigns as to the most efficient operating methods. In fact the philosophy of BAA does not depart so greatly from that of the other

large international airports we have visited. Moreover, it employs the same techniques as FNYA, particularly in the use of consultants, as in the planning of Gatwick. After only a year's existence it cannot yet be expected to have determined its longer-term objectives. In forming these we are confident that BAA will assign a substantial part of its resources to research—ideally this would entail a strong research team within BAA, supplemented by outside help where necessary—and should take every step short of imposition to ensure that the airlines recognise the lessons drawn from such research. This approach seems to us to be suitable for airports generally: we are convinced that it will contribute greatly to the efficiency and attraction of airports and, consequently, air freight in the United Kingdom.

Conclusions

Careful thought should be given at a national level to avoiding excessive duplication of facilities for air freight at provincial airports.

BAA should implement the proposal for a single import shed at Prestwick.

Steps should be taken to provide adequate routing and signposting between the three London airports.

Given the importance of progressive forwarding agents in air-freight development, urgent attention should be directed to the provision of a bonded shed in the new Heathrow cargo terminal for those agents who can qualify as consolidators of unitized cargo and providers of through transport services.

BEA and other short-haul operators should reduce the time by which goods must be delivered for transfer to a particular flight, with a view to increasing the attraction of Heathrow for entrepot trade.

HM Customs should consider whether any easement is possible on the procedure for the transshipment of consignments arriving in U.K. from abroad for consolidation for other foreign destinations.

BAA, in forming its long-term objectives, should undertake extensive research in the detailed planning and layout of individual airports and should co-operate fully with the airlines in applying the lessons to be drawn from such research.

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Appendix 1

Basic information on air freight

Note by the Board of Trade (Civil Aviation Department)

Growth in air traffic

The carriage of freight by air is increasing at a fast and accelerating rate. Total traffic on scheduled services of the world's airlines increased on average by 11 per cent a year between 1955 and 1960 and by an average of 18 per cent a year between 1960 and 1965 with increase of 20 per cent and 28 per cent in 1964 and 1965.

British airlines' freight traffic on scheduled services is growing faster than the world average—22 per cent a year between 1960 and 1965.

The weight of freight traffic handled at British airports on scheduled and charter, international and domestic flights, increased on average by about 20 per cent a year between 1960 and 1965.

UK exports by air

Growth

In 1965 the f o b value of UK exports and re-exports by air was £425 million, or 8.9 per cent of the total value of UK exports and re-exports. Between 1960 and 1965 air exports grew at an average rate of 14 per cent a year, compared with 5 per cent for total exports. (Corresponding figures for imports, c i f values, were £438 million air imports in 1965, 7.6 per cent of total imports, growing at 15 per cent a year over the past five years, compared with 4 per cent for total imports).

Preliminary figures for the first 6 months of 1966 suggest growth in air exports well above the recent average. Compared with the same period in 1965, the total value of exports and re-exports increased by 7 per cent but air exports were up by 32 per cent and the air share increased from 8.5 per cent to 10.0 per cent.

Commodity composition

Air transport tends to specialise in the types of export carried. Goods are attracted to air transport for a variety of reasons, but perhaps the three principal characteristics of these goods are one or more of the following:

- (i) high value to weight ratio
- (ii) fragility
- (iii) need for quick delivery.

For many goods with these characteristics, the total costs of transport, including packaging, insurance, and the cost of capital tied up in goods in transit, is less for air than for surface. Highly-manufactured articles, such as scientific instruments, therefore figure highly in air exports. So do furs, clothes, samples, and spare parts.

The following table gives the trade classification commodity divisions in which, in 1965, air accounted for more than 10 per cent of total exports and re-exports, by value.

	<i>F o b value of air exports and re-exports £m</i>	<i>Air share in total exports and re-exports %</i>
Hides, skins and fur skins undressed	18	51
Clothing	18	37
Scientific etc instruments, watches and clocks	38	36
Leather, leather manufactures, dressed fur skins	10	28
Medicinal and pharmaceutical products	17	25
Miscellaneous manufactured articles	41	24
Other commodities and transactions	25	15
Non-ferrous metal	27	15
Live animals, excl zoo animals, dogs and cats	4	12
Electrical machinery, apparatus and appliances	48	14
Transport equipment	85	12
Machinery, other than electric	97	10

Country composition

There is a great variation from country to country in the proportion of our exports carried by air, ranging from 25 per cent for France, the highest, to negligible proportions for a few countries. There does not seem to be any relationship between distance and the proportion of exports going by air. It seems that the commodity composition is the main factor. The following table gives the main countries to which in 1964 air carried a high proportion of our total exports and re-exports.

	<i>£m.</i>	<i>% of total exports and re-exports</i>
France	49	25
USA	88	17
West Germany	53	18
Italy	22	18
Switzerland	15	15
Japan	9	17
Canada	26	13
Netherlands	24	12
Belgium	13	7

Airports

Customs facilities are regularly available at 16 airports in the United Kingdom and at a further 15 airports by prior arrangement. Export of freight by air tends to be concentrated on a few airports, however, with Heathrow by far the most important. The following table shows the tonnage of freight departing on international flights from each UK airport in 1965. (Not all the traffic from each airport necessarily begins its air journey at that airport. Some may have arrived at the airport on other air services, domestic or international, for onward transshipment.)

	<i>Short tons</i>	<i>Per cent of total</i>
Heathrow	108,540	67
Southend	20,990	13
Gatwick	6,470	4
Manchester	6,420	4
Liverpool	4,190	3
Prestwick	3,180	2
Lydd	2,480	2
Others	8,490	5
Total	160,760	100

This pattern has not changed very much over the years from 1959. The London airports' (Heathrow and Gatwick) share of the traffic was 76 per cent in 1959 against the 71 per cent of 1965, but Manchester's traffic has shown very little growth since 1959 and its share of the total has dropped from 8 per cent to 4 per cent. Southend, on the other hand, continues to attract a growing proportion of freight traffic and its share has increased from 3 per cent in 1959 to 13 per cent in 1965.

Economics of air freight

Freight traffic by air has historically developed as an adjunct to the carriage of passengers. This is because the requirements for aerodynamic shape impose upon aircraft some volumetric capacity which cannot be used for carrying passengers and is not needed for carrying fuel. Air freight rates have therefore been geared to providing adequate loads for freight holds of passenger aircraft. So long as charges exceed handling costs, it is profitable for the airlines to quote rates which make little or no contribution to the aircraft operating costs. For this reason the carriage of freight in specialised all-cargo aircraft has developed relatively slowly. Many airlines operate all-freight services, not because they are profitable in their own right, but because their operation improves the saleability of their total cargo capacity by offering capacity for very large loads and by offering schedules outside the normal hours for passenger travel.

The level and multiplicity of air freight rates has developed against this background. A lower limit to the level of air freight rates is set by the ground handling, sales and accounting costs and an upper limit is set by the need to encourage freight to come forward in sufficient quantities for the holds of

passenger aircraft. A multiplicity of rates has developed because of the different composition of trade between different countries. Special commodity rates have been introduced on certain routes, often only in one direction, to even up the loads. In addition to the special commodity rates, a sliding scale is often introduced, the bigger the consignment, the lower the cost per kilogramme, which encourages consolidation of loads and hence reduces the handling costs to the airlines.

As in the case of passenger tariffs, minimum rates for air freight on international routes are established through IATA machinery, subject to the formal approval of the governments concerned. Owing to the multiplicity of freight rates, these governments' approvals have usually been readily given except for particularly important changes such as the ending of a very low commodity rate. Freight rates tend to be fixed for two years at a time although more frequent changes are possible. The freight rate structure is an evolutionary one which has to respond to changing conditions, for example the availability of discounts for freight carried in approved containers and containers with pallets, and the trend towards creating progressively lower rates for large consignments.

There is a wide variation in the freight revenue earned per ton mile between routes. There is a pronounced taper with distance, as is shown by the following figures for BEA and BOAC for 1965/6:

	<i>BEA (International routes)</i>	<i>BOAC</i>
Revenue earned per ton-mile	39 pence	24 pence
Average distance of haul	465 miles	3,870 miles

Operating costs of all-freight aircraft (excluding ground handling, sales, etc costs) are about 30 pence per ton-mile carried for modern short-haul aircraft and about 15 pence per ton-mile carried for modern long-haul aircraft, assuming load factors of about 60 per cent. This means that ground handling, sales costs etc must be less than about 10 pence per ton-mile carried for all-freight services to cover costs. For long haul operations, this may, at present, be just about attainable, but for short haul operations, where terminal costs per ton-mile are much higher, this target is at the moment out of reach. However the use of special freighter aircraft is encouraging the development of sophisticated ground handling and loading systems which will reduce costs, and it is possible that even short-haul freighter aircraft may ultimately be able to operate at a profit.

Dependence on passenger services

Freight traffic benefits, in terms of costs, from its dependence on passenger services. In the absence of passenger services, freight charges would have to be considerably higher. Passenger services are not, however, always best suited to the timings and routings of freight traffic. Ideally much air freight traffic requires delivery overnight—consigned one day for delivery the next. But passenger services are most concentrated during the daytime. All-freight services provided by the airlines are therefore a valuable adjunct, but, because of their economics, are limited in extent. Lower handling costs and improved operating economics of all-freight aircraft should, however, result in a marked growth in all-freight services in the future.

The nature of air freight economics is such that little freight travels by charter

services. Charter rates do not 'under-cut' the scheduled service rates, as they do for passenger services, as the charter charge has to cover the full operating costs of the flight. Furthermore the carrying capacity of aircraft is large in relation to the likely size of consignment of goods which justify carriage by air. Even a DC3 has a capacity of more than 3 tons. This means that 'tramping', very common in sea transport, is virtually non-existent in air transport.

Outlets for exports by air therefore very much reflect the pattern of scheduled passenger services. So far as the UK is concerned, this has meant a heavy concentration on London, as the volume of passenger traffic out of the provinces has not hitherto been sufficient to justify many direct services to the Continent.

December 1966

Appendix 2

Reasons for using air freight

Analysis made by Stanford Research Institute

I To speed delivery on following types of items :

A Increase sales or improve service in time-limited situations

- 1 Fad or fashion merchandise with short selling life, or time limited items.
- 2 Products temporarily premium priced.
- 3 Seasonal or holiday merchandise
- 4 Perishable commodities, to extend market areas
- 5 Perishable commodities, to lengthen useful market life

B Increase utilization of production facilities and equipment

- 6 Production parts, to prevent down time
- 7 Products or services seeking wider markets from a fixed facility
- 8 Mobile production units, to cut transit time between jobs

C Reduce company or customer investment in goods in transit

- 9 Products processed at widely scattered facilities or whose distribution points are distant from markets, to reduce investment while in transit

D Meet unpredictable demands and emergencies

- 10 Products needed because of unpredictable demand or emergency

II To cut inventory and storage costs (while improving service) of items :

E Reduce inventory investment

- 11 Where market is untested, demand undetermined

F Reduce risk of inventory loss or obsolescence

- 12 Where value loss through style change or perishability can be prevented

G Reduce investment and operating expenses associated with inventory facilities and services

- 13 Where storage facilities may be reduced or eliminated
- 14 Where lower levels of inventory reduce servicing requirements
- 15 Where regional warehousing can be eliminated by centralized inventory

H Reduce costs incurred by having jobbers or wholesalers perform inventory function

- 16 Where jobbers and wholesalers can be by-passed through better procurement or distribution

III To take advantage of superior conditions or carriage where the following applies:

I Reduce risk of having commodities lost, stolen, damaged or spoiled in transit

- 17 High rate of theft or loss in transit
- 18 Substantial physical damage potential
- 19 Spoilage or deterioration in transit

J Reduce costs and time over which provisions for preserving or protecting goods in transit are required

- 20 High protection costs against loss or theft
- 21 Heavy or costly packing
- 22 Environmental control costs
- 23 Special services or handling required
- 24 Higher insurance cost applies in other transport

K Enhance control or management of goods in transit

- 25 Premium handling, difficult co-ordination or documentation prevails in other transport

L Reduce duties in international movements

- 26 Duty at destination is assessed on gross weight

M Expedite handling of small lots

- 27 Inconvenient or unpredictable departure or arrival times characterize other transport to or from usual shipping points
- 28 Volume is sufficient to gain air but not surface weight breaks

Appendix 3

Air freight costs to Europe

Study by B E A

The following notes and tables have been extracted from the BEA advertisements in the *Economist*. The case studies were undertaken by the Economist Intelligence Unit.

Export of fashion garments

MARK RUSSELL LTD, LONDON

At the beginning of an operation, stocks are built up in Britain. Then on a target date they are rapidly despatched by air to the point of sale to achieve maximum immediate impact. Follow-up supplies are then flown over as required to meet the market at its peak. In this way the maximum marketing advantages are obtained. Delivery time by surface is 8-10 days: by air, only 36 hours.

The transport cost comparison/360 kilos/London-Copenhagen

	Sea		Air	
	£	s	£	s
Freight	35	0	58	10
Packing	7	5		5
Delivery to (port)	13	10	5	0
Insurance	4	0	3	8
Totals	59	15	67	3

The real comparison

Although the transport comparison shows an air premium of a few pounds, this is small in relation to the value of the consignments, which average £1,200. Garments sent by surface need removal, by re-pressing after unpacking. When sent by air, there is no unpacking or re-pressing to be done. The cost of labour saved in this way is often greater than the air premium. Again capital is tied up for only 1½ instead of 8-10 days. But the real cost effectiveness of the operation is reflected in the profitability of a rapidly expanding market, competitively serviced.

Export of machine tools and spares

ADCOCK AND SHIPLEY LTD, LEICESTER

The Bridgeport machine weighs roughly a ton and is consigned by air or surface according to circumstances. In a four and a half month period this year, five

machines went to France and seven others to Ireland and Switzerland by BEA Cargo. These destinations together with parts of Germany are the most economic for air cargo because of savings in time, packing and warehousing, as well as competitive freight costs.

Cost comparisons

The following is an example of comparative costs for a specific consignment

London—Dublin

	<i>Method of transport</i>	
	<i>Surface</i>	<i>Air</i>
Freight cost f o b	16—20	50
Packing delivery and other charges	40	6
Combined costs	56—60	56

In this comparison the various charges are not all in the same category, but the totals are strictly comparable. The figures illustrate the savings available from lighter packing and less packing time. Warehousing costs are not included, although they are higher by surface. Given this cost picture the speed, convenience, predictability and marketing impact of BEA Cargo are making it the automatic choice.

Export of aircraft parts

DOWTY GROUP LTD, CHELTENHAM

Cost comparisons made in 1964 covering freight charges only, for spares and undercarriages to Bremen, alternatively by air or sea, showed a saving prior to packaging, insurance, delivery and other reduced costs as follows:

	<i>Surface</i>			<i>Air</i>		
	£	s	d	£	s	d
Spares (value £17,318)	117	17	0	75	19	0
Aircraft undercarriages	42	7	0	17	18	6

Import of microwave ovens

J LYONS AND CO, LONDON

These ovens are used by J Lyons or sold or rented.

The apparent cost comparison

	<i>Sea</i>			<i>Air</i>		
	£	s	d	£	s	d
Freight, cartage, insurance and clearance cost	4	18	0	14	0	0

The real position

Although there is an apparent premium on transport costs of £9 2 0 for using air cargo, the real position when the overall distribution picture is analysed is the reverse. A further real gain in profit, more than equal to the apparent air cargo premium, is the extra month's rental obtained by having the unit in operation

one month earlier. Apart from eliminating the considerable cost of damage, there are additional savings on warehousing and packing.

Parallel with these cost advantages is the tremendous marketing advantage which the speed and certainty of BEA Cargo provides.

Import of photographic materials

JOHN BLISHEN AND CO LTD, LONDON

Reduction in inventory, working capital and interest charges

Materials can be delivered from Germany by air in 3 to 4 days, whereas surface transport is likely to take 3 to 4 weeks or more. The saving in transit time means that stocks can be reduced appreciably, with a considerable saving in working capital and interest charges, and quite apart from this, some photographic materials are of limited life and need to be fed through the pipeline as quickly as possible. Liability to damage and pilferage is a particularly important point where photo-sensitive materials are concerned, but with air transport there is a significant drop in losses of this kind. Finally, Customs clearance is much quicker by air, and this can be vital when urgent consignments are involved.

The cost of air cargo can be higher than by surface, but instances where it is cheaper show the following ratios:

Photographic printer/284 kilos/Paris—London

	<i>Surface</i>			<i>Air</i>		
	£	s	d	£	s	d
Packing	3	0	0			
Insurance	3	0	0	2	12	6
Delivery	3	10	0	2	4	0
Port charges	6	0	0	8	6	8
Freight cost	8	10	6	9	13	1
Total	24	0	6	22	16	3

Savings by air £1 4s 3d

Unexposed photographic material/516 kilos/Dusseldorf—London

Packing	10	0	0			
Insurance	1	18	0	1	8	0
Delivery	1	1	6	4	6	0
Port charges	5	11	0	6	6	0
Freight	16	11	6	22	2	3
Total	35	2	0	34	2	3

Savings by air 19/9

Transport cost comparisons

The following tables illustrate only savings in actual transportation, insurance and packing. In all cases, other cost-effectiveness criteria, as enumerated in this series of articles, are at least of equal importance. Thus in the case of computers and baking machines, the cost of servicing capital tied up in transit by surface methods of transport can amount to large sums. Even more important is the fact that machines can be in operation, earning profits, perhaps two weeks earlier.

INTERNATIONAL COMPUTERS AND TABULATORS LTD

ICT 1900 series of computers/*London-Dusseldorf*

	<i>Sea</i> £	<i>Trailer</i> £	<i>Air</i> £
Packing	550	165	150
Delivery to port (2 lorries)	50		35
Freight and port charges	110	200	160
Insurance	63	61	61
C i f totals	773	426	406

Delivery to customers, Customs clearance, duty and taxes extra in all cases

Programme board punch/*Belfast-Dusseldorf*

	£ s	£ s
Packing	28 12	10 9
Incidentals	3 10	2 9
Freight	7 0	16 16
Insurance	1 0	16
C i f totals	40 2	30 10

Tabulator/*London-Dusseldorf*

	£ s	£ s
Packing	140 0	22 0
Incidentals	12 0	12 0
Freight	30 0	71 0
Insurance	10 0	9 0
C i f totals	192 0	114 0

4100 Computer with ancillary equipment/London-Milan

	<i>Sea</i> £	<i>Road Ferry</i> £	<i>Air</i> £
Packing—labour/material	330	250	250
Freight	300	400	250
F o b charges	75	35	65
Insurance	62	50	23
From port to customer (estimated)	75		75
Total cost	842	735	663

London-Hamburg

	£	£	£
Packing—labour/material	330	250	250
Freight	188	180	205
F o b charges	75	35	65
Insurance	62	50	23
From port to customer (estimated)	50		50
Total cost	705	515	593

ATLAS EQUIPMENT (LONDON) LTD

Import of Bakery Machines/Black Forest Area-London*Machines*

	<i>Sea</i> £ s	<i>Rail</i> £ s	<i>Air</i> £ s
Freight	87 0	170 0	158 17
Insurance	10 4	10 4	5 19
Demurrage and other charges		16 0	
Agency fees	6 6	6 6	6 6
Landing and port charges	39 11		
Customs clearance	4 16	5 16	15 0
Packing	130 19	80 19	23 7
Totals	278 16	289 5	209 9

Plant

	<i>Sea</i> £ s	<i>Rail</i> £ s	<i>Air</i> £ s
Freight	371 15	460 0	559 12
Insurance	48 13	48 13	31 8
Demurrage and other charges		75 0	
Agency fees	15 15	15 15	15 15
Landing and port charges	125 4		
Customs clearance	6 18	16 18	21 6
Packing	322 17	260 17	60 19
Totals	891 2	877 3	689 0

Comment

The costing details given show how differences arise in transport cost comparisons and suggest the order of importance which should be attached to them. Insurance, for instance, is almost always less expensive by air than by surface, but the order of saving does not compare with savings on packing costs which in some cases are sufficient to pay for the entire freight charges. Savings from avoidance of damage can be very considerable though they are not included in these figures. Road ferry services can sometimes compete with air cargo in cost terms but generally they cater for large consignments and they are rarely if ever as quick as air cargo shipments.

The importance of the commodity rate system cannot be over-emphasised since a costing at the standard rate will produce a theoretical answer double or more what it should be if one of the many special commodity rates apply.

November 1966

Appendix 4

Shippers' views on air freight

Memorandum by the Air Transport Committee of the British Shippers' Council

Introduction

The following comments summarise the views of the British Shippers' Council on matters affecting the movement of imports and exports by air.

Awareness by potential users of air freight

The initiative for selling the 'air transport services' to British industry must continue to come from the airlines themselves, but while attempts have been made to 'make a sale', shippers and potential shippers by air are not always sufficiently aware of all the advantages. The advertising campaign of various airlines in the daily and technical press may help to rectify this general ignorance to a certain extent, but the increased use of aircraft will only follow sustained market research aimed at relating the advantages of this type of transport to the distribution policy and location of individual firms. In this connection the establishment of an International Air Cargo Bureau by British European Airways appears to have been reasonably successful.

Distribution policy

It is axiomatic to state that a company's distribution arrangements should be an integral part of its general marketing policy. In many firms supervision of distribution might well receive more attention at boardroom level. The relative isolation of the shipping department and the lack of information can prevent the assessment of the total distribution costs. This will militate against the use of 'expensive' air freight as the extra cost cannot be seen in relation to the possible consequent savings in other departments.

Delivered Price Concept for exports

The Delivered Price Concept has already been fully discussed in the *UNEP* report *Through Transport to Europe*. A simple air freight rate structure is desirable as a means of ascertaining delivered price. At the same time information on the charges for ancillary services should be made easily available and some shipping and forwarding agents could materially assist in this process by improving their knowledge of overseas transport facilities, thus enabling shippers to quote on a cif or delivered price basis.

Some problems of selling on a delivered price basis should be mentioned. A shipper attempting to provide a 'through service' needs to employ either an airline that is willing to accept the responsibilities of clearing the goods through Customs and delivering them to the customer, or an efficient agent. There are many complexities in the duties and taxes charged on imports overseas.

Speed advantages of air freight

The inherent advantages of speed of movement in the air are often nullified on short hauls by poor ground handling facilities and administrative delays. The potential speed of air cargo movement should be matched by speedy and simple ground facilities, simple documentation and Customs procedures. Delays at airports frequently necessitate extra clerical work. Better communications to and from the airports could play their part in reducing and minimising ground transit costs.

Delays are caused at some airports by the large queues of lorries, some of which are only partly loaded. This could be obviated to some degree by deliveries and collections made outside the evening peak hours and the end of the week rush or by grouping the cargo outside the airport or by any relaxation in the road licensing conditions which could lead to economies. The problem will be difficult to resolve however as shippers will always be anxious to send their export orders to their customers on the first available flight after the goods are ready for despatch.

Future services

We are aware of the substantial increase in the volume of air freight that has taken place for a long time and share the generally held view that this trend will continue. In our opinion, even the provision of the new air cargo terminal at Heathrow (London) Airport will be insufficient for the volume of air cargo in the early seventies and we consider that it will be necessary to find a way to decentralise air cargo services and facilities without any loss of efficiency.

More Inland Clearance Depots, licensed for Customs clearance, should be established and the steps already taken by British airlines to increase cargo services from provincial airports should be encouraged.

As far as the planning of services and facilities from a national standpoint is concerned, there is no effective co-ordinating organisation within the UK and this omission needs to be rectified. While recognising the contribution which can be made by the British Airports Authority there remains the need to co-ordinate with other airport authorities and to ensure that action is taken to meet the needs of users. The NSC would like to know how this is to be done and by whom.

Air freight rates

The NSC feels that air freight rates could be reduced by improved and more economic handling of cargo on the ground. The assembly of cargo on pallets or in containers to lower costs could perhaps be encouraged further by an extension of the concessions already embodied in the rate structure.

The NSC has been considering both the case for deferred cargo rates and quantity discount rates as a means of developing the use of air freight although so far no firm conclusions have been reached.

NB Deferred cargo rates: consignments carried on a space available basis at substantially lower rates, subject to a built in time lag for delivery at destination—applicable to certain routes in the USA

The cost advantages in the reduced packing needed for air cargo are not standard to all air freight and relate to the individual circumstances of the products that are shipped. Ingenuity of managements of both transport provider and user could assist in reducing packing costs and the services of packaging consultants are readily available.

International Air Transport Association

We reserve our position with regard to the role of IATA

Documentation

It would be helpful to shippers if all those concerned with air freight documents could hasten standardisation thus increasing the degree of interchangeability.

Customs procedures

All are agreed that the need for simple and easily understood procedures for imports and exports with the minimum of documentation is a paramount requirement to ensure rapid Customs clearance of air cargo. This is essential to achieve the major competitive factor of air transport—speed.

Much has already been achieved and the BSC is currently examining import procedures with HM Customs and are grateful to them for their co-operative approach.

Anything that could be done through official channels to alleviate clearance delays overseas would be welcomed by the BSC.

Future development of air cargo

We think that there would be some advantages in an extension of the wholly air freight services without prejudice to the retention of the mixed cargo/passenger services both for reasons of flexibility and because these services provide an opportunity for the very speedy transit of exceptionally urgent consignments.

Use of Inland Clearance Depots and unitisation of cargo

We repeat that since the number of airports is limited there is a strong case for establishing ICDS, not necessarily for air cargo alone, to accept and unitise exports and to clear imported air cargo. This would permit rapid loading and unloading at airports and reduced ground handling, which is the point where congestion occurs. The proximity of Customs clearance facilities to the ultimate destination would facilitate the presentation of paper and the rapid disposal of queries. Full consultation between shippers and HM Customs on the regulations permitting consignments to be moved between airports and ICDS for clearance is most desirable.

March 1967

Appendix 5

The structure of air cargo costs

Note by Mr Stephen Wheatcroft

Introduction

The objective of this paper is to provide an outline of the cost structure of air cargo operations; to indicate the major parameters which cause costs to be higher or lower in different circumstances; and to present some information about the current level of costs in this country and the United States.

It is hoped that this analysis will indicate some of the additional cost data which needs to be collected to provide an adequate basis for a critique of UK air cargo costs, and suggest the kind of external improvements in the operating environment which could be recommended by the working party to assist the reduction of UK air cargo costs and charges.

Cost classifications

A primary distinction which is normally made in airline operating accounts is that between the costs associated with operating the aircraft—normally called 'direct operating costs'—and the costs incurred in traffic handling, sales promotion, accounting, administration and other ground functions.

Direct operating costs include:

depreciation, insurance, maintenance and overhaul costs, fuel costs, crew pay and expenses, and landing charges.

Ground operating costs include:

terminal handling costs, sales and advertising costs, accounting costs, and administration costs.

It is helpful to think of ground operating costs in terms of the load handled, *ie* as a cost per ton handled or as a cost per ton mile carried (LTM.) Aircraft operating costs, on the other hand, are best thought of as capacity costs, *ie* as a cost per capacity ton mile (CTM) which is transformed into a cost per LTM by the load factor achieved.

Parameters determining direct operating cost levels

The most important factors which determine the level of direct aircraft operating costs per CTM are:

- 1 Size of aeroplane used
- 2 Stage distance over which aircraft is operated
- 3 Utilisation of aircraft and aircrews

The first two of these parameters are largely outside the immediate control of airline management: they tend to be dictated by the nature of the market which the airline is endeavouring to serve. The third factor is, to some extent,

a measure of management efficiency but it must also be noted the seasonality of the traffic pattern and the average length of traffic haul—again factors outside the immediate control of management—will have a marked effect upon the utilisation of aircraft and crews.

Size of aircraft has a very significant effect on operating costs. If all other operating conditions are held constant the effect of increase in aircraft size can, very broadly, be represented by a 20–25 per cent reduction in cost per CTM for each 100 per cent increase in aircraft size.

Stage distance has a marked effect on operating costs because the average speed of the aircraft increases asymptotically towards cruising speed—thus increasing hourly productivity—as stage distance increases up to the designed range of the particular type of aircraft. As illustrations of the influence of stage distance on aircraft operating costs it may be noted that the direct costs per CTM for the Boeing 707–320C are 20 per cent lower at 3,500 miles than at 1,000 miles and that the direct costs of the Argosy 222 are 25 per cent lower at 750 miles than at 250 miles.

Figure 1/Freighter Aircraft Cost Curves

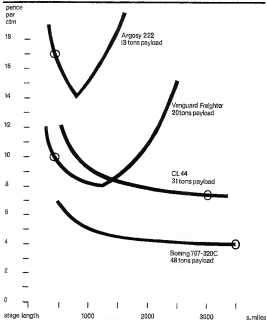


Figure 1 shows the direct cost curves against stage distance for four types of freighter aircraft: the Argosy 222, CL44, Vanguard Freighter, and the Boeing 707-320C. Spot points on these curves indicate the cost levels quoted for these aircraft in Appendix 6. The same qualifications, as previously, must be made about the comparability of the cost figures presented in Figure 1. The curves may, however, be taken as giving a reasonably accurate illustration of the influence of aircraft size and range on the level of direct operating costs. The low level of costs shown for the Boeing 707-320C does, of course, also reflect advances in technology.

Load factor is a further vital parameter in air freight economics. Apart from the normal commercial problem of choosing the appropriate aircraft size relative to traffic demand, there are two other problems of particular significance in air freight operations. First is the problem of directional variations in traffic flows. This is a widespread problem which tends to keep average load factors in freighter operations relatively low. Second is the problem of volumetric capacity. With an average cargo density of 10 lb per cubic foot (or less), some freighter aircraft will 'cube out' before full weight payload is achieved. The weight load factor will, therefore, be held down by this lack of volume.

It will be clear from this analysis that, in the area of direct operating costs, a downward trend may be expected to continue as traffic grows and larger aircraft are brought into service. This conclusion applies to short-haul as well as to long-haul operations.

Parameters determining ground operating cost levels

The analysis of ground and indirect operating costs presents more complications than the analysis of direct operating costs. These complications arise from the fact that the nature of the traffic tends to be at least as important a cost parameter as the efficiency of the equipment and systems used by the airlines.

In Table 1 an attempt is made to summarize the major factors involved, making a distinction between 'systems and equipment' factors, which are directly within the control of airline management, and 'traffic characteristics', which can only indirectly be influenced by airline management.

Table 2

<i>Indirect cost category</i>	<i>Cost parameters</i>	
	<i>System and equipment</i>	<i>Traffic characteristics</i>
Terminal handling costs	(a) Cost and scale of terminal facilities	(a) Size of consignments
	(b) Utilization of terminal facilities	(b) 'Unitization' of consignments (i.e. number of packages per consignment)
	(c) Productivity of staff employed	
Aircraft loading costs	(a) Pallet loading	(a) Size of consignment
	(b) Aircraft dock or apron vehicles	(b) 'Unitization' of consignments
	(c) Packages on passenger aircraft	
Documentation and accounting costs	Degree of mechanisation of accounting	Size of consignment

The cost parameters set out in Figure 2 are the major factors which determine the costs per ton of cargo handled. Length of haul will determine the extent to which these costs are spread over the actual carriage. Length of haul is, therefore, a vital parameter in establishing the level of indirect costs per load ton mile (LTM).

Levels of ground and operating costs

The working party has already been given some figures about the level of ground and indirect costs for current BEA and BOAC freight operations.

BEA has said that ground and indirect costs for 1966/67 are estimated at 17.0 pence per LTM. With an average freight haul of 386 miles, this represents a cost level of £27.3 per ton. BEA further states that cargo terminal functions at Heathrow Airport are estimated to cost £14.7 per ton for export cargo and £13 per ton for import cargo. Since these latter figures exclude sales, accounting and other indirect costs which are included in the first figure, it follows that handling costs at Heathrow are significantly higher than those of other stations in BEA's network.

BOAC has said that ground and indirect costs are estimated at 2.34 pence per CTM which, at a load factor of 55 per cent, is 4.25 pence per LTM. With an average freight haul of 3,930 miles, this represents a cost level of £69.6 per ton. BOAC's paper concludes by saying that ground handling costs at the present Heathrow cargo terminal in 1966/67 are estimated at £15.4 per ton. This figure, which excludes aircraft loading, is the average cost for export and import traffic (*ie* total terminal costs divided by total tonnage), and therefore must be doubled to indicate the Heathrow cost per ton. The resulting handling cost—£30.8 per ton for Heathrow—is substantially higher than the average for all BOAC traffic, which is £21.5 per ton. The other items of indirect costs—cargo attendants, commission, direct selling costs, and overheads—make up the balance of £48.1 per ton. BOAC have explained that the Heathrow cost level (£30.8 per ton) is more relevant than the average figure (£21.5 per ton) because the Heathrow figure fully covers all costs involved whereas most of their other stations do not have separate cargo handling facilities which can be fully charged to cargo.

Despite the extent of the financial data reported by US airlines to the CAB, the information available about ground and indirect costs for freight operations in the United States is not very adequate. Professor Stanley Brewer, of the University of Washington, has written in a forthcoming monograph: 'The uniform system of accounts prescribed by the CAB is so structured that the separation of passenger costs from cargo costs is not directly traceable'. Professor Brewer has, however, brought together in his monograph a great deal of information from various sources to build up a general picture of US domestic air cargo costs. He concluded in 1962 that 'The cost of handling freight through some terminals is \$7.00 to \$10.00 per hundred pounds' (*ie* from £30 to £71.4 per ton). In 1966 he is able to write: 'In the most efficient air freight terminals of today it costs \$2.00 to \$3.00 per hundred pounds to move cargo through the facilities' (*ie* from £14.3 to £21.4 per ton). Professor Brewer regards these cost levels as being much too high—three or four times as high as the handling costs of motor carriers—and believes that they can and will be greatly reduced in the next few years.

The following figures are given as illustrations of the current level of costs achieved by an efficient airline. The average consignment carried by American

Airlines is 400 lb but each consignment, on average, consists of 8 packages of 50 lb.

Table 2		<i>per ton</i>
Warehousing costs	<i>58.6 cents per package</i>	\$23.44
Freighter loading	<i>Estimated</i>	\$ 5.34
Accounting costs	<i>\$2.78 per consignment</i>	\$13.90
		per ton \$42.68
		<i>ie per ton</i> £15.2

Of these costs, labour alone was estimated to account for \$28.12 per ton.

Selling costs are not included in the figures given above neither are the costs of administration. It is possible that these other costs might be approximately equal to the terminal costs quoted above.

It was noted earlier that the physical characteristics of consignments—weight and number of packages—are important factors in determining the level of cargo handling costs. In the cost study just mentioned the traffic carried by American Airlines averaged 400 lb per consignment with an average package weight of 50 lb. Another study made by American Airlines produced even lower weights for the packages in each consignment. Table 3 gives the results of the survey.

Table 3/American Airlines/Special study of consignment and package sizes

<i>Consignment size lb</i>	<i>Average package lb</i>
0 —499	32.9
500 —999	43.1
1,000—1,999	42.5
2,000—2,999	34.2
Over 3,000	28.3

Professor Brewer comments: 'The fact that most of the weight is moving in such small packages has a large bearing upon the terminal and cargo handling costs. There is a strong tendency to "hand stow" when the bulk of the packages can be carried by one man'. There is a clear need for 'unitization'—physical consolidation of packages—in order to get the advantages of bulk handling. Studies made by Robert Stoessel of Lockheed have led him to the conclusion that airline terminal costs could be reduced more than 75 per cent if single piece 2,000 pound consignments were handled instead of five-piece 200 pound consignments.

It is this physical nature of air shipments which, according to Professor Brewer, explains why air cargo handling costs are so much higher than those of motor carriers in the United States. Motor carriers handling and other indirect costs are given as \$15.50 per ton. But the motor carriers themselves have said that their costs for handling packages of less than 100 lb are not very different from those of the airlines.

A further point emerges from the American Airline cost study is the high incidence of accounting costs. These are given as \$13.90 per ton and they represent one third of the terminal costs. These costs are essentially a cost per consignment and would be halved as a cost per ton if consignment size were doubled.

December 1966

Some basic data about freighter aircraft

Manufacturer	Power	Max. T O W (lb)	Payload (Tons)	Cruise payload speed (mph)	Max. payload (S.M.)	Main compartment			D.O.C. d. per C.T.M.
						Length (ft.)	width (in.)	height (in.)	
DC3	2 x Piston	28,000	3½	170	660	30.0 x 92 x 79	71 x 85	Side	27.0d
DC4	4 x Piston	73,000	7½	200	1,800	55.5 x 105 x 81	90 x 67	Side	16.6d
Convair	4 x Piston	75,800	8½	200	1,800	80.2 x 105 x 81	81 x 81	Front	15.6d
Viscount 800	4 x Turbo prop	64,500	7	305	1,200	54.0 x 113 x 77	64 x 36	Side	21.0d
Argosy	4 x Turbo prop	90,000	13	270	700	46.7 x 120 x 80	94 x 116	Front & Rear	17.0d
Vanguard	4 x Turbo prop	146,500	20	390	2,000	90.1 x 123 x 87	72 x 118	Side	10.6d
DC6A	4 x Piston	107,000	16½	270	2,700	68.8 x 108 x 93	79 x 126	Side	10.0d
DC7F	4 x Piston	145,000	20	310	3,300	87.3 x 108 x 93	78 x 124	Side	11.5d
Britannia	4 x Turbo prop	185,000	16½	360	3,600	86.3 x 135 x 80	72 x 118	Side	9.0d
Heracles	4 x Turbo prop	150,000	25	325	2,900	51.3 x 123 x 109	109 x 120	Rear	9.0d
CL 44	4 x Turbo prop	198,000	31	380	3,400	98.5 x 132 x 81	81 x 132	Rear	7.5d
Bellair	4 x Turbo prop	300,000	60	340	3,000	85.0 x 144 x 165	144 x 144	Rear	7.5d
DC 8 F	4 x Jet	315,000	47	525	3,500	106.2 x 128 x 86	85 x 140	Side	4.0d
B 707-320 C	4 x Jet	327,000	48	530	3,300	108.0 x 141 x 91	97 x 140	Side	4.0d
L 300	4 x Jet	518,000	42	520	3,200	81.0 x 148 x 109	109 x 123	Rear	4.0d
B 747 F	4 x Jet	680,000	107	535	3,500	170.0 x 233 x 96	96 x 253	Front	2.8d

Appendix 7

Air freight—the sleeping giant

Paper by the British Air Line Pilots Association

The air transport industry is now in the process of awakening a potentially dynamic participant in the field of freight haulage. The Association is keenly interested in ensuring the giant wakes peacefully and finds present the correct environment whereby his full potential is successfully realised.

The Association is of the opinion that air freight has a significant role to play in any national plan to expedite the flow of exports from the United Kingdom. In support of this opinion the Association offers its views formulated through being in daily contact with air freight operations. Two areas of the total operation appear eminently worthy of comment by the Association:

A The Freight Carrying Vehicle (FCV).

B The supporting services to the FCV.

Before discussing these particular headings, some observations on general air freight operations appear warranted. It is only in recent years that air freight has emerged as a significant product of the air transport industry—why? The Association believes the influencing factors are:

(i) The increasing difficulty within the industry to achieve an adequate economic profitability from the carriage of people.

This has arisen from the rapid technological development of the passenger carrying vehicle resulting in the premature obsolescence of equipment. Similarly, increasing difficulty within the aircraft manufacturing industry has brought intense pressure on the operator to replace equipment, again prematurely, in order to remain fashionable. Finally, the world-wide climate has created a proliferation of air transport operators reducing the return that would normally be expected from investment.

(ii) The development of an additional carrying capacity within the passenger carrying vehicle.

(iii) The previously prohibitive scale of capital investment required to establish a naturally efficient and commercially viable all-freight operation.

(iv) The lack of a true freight carrying vehicle to stimulate advanced thinking on the supporting handling processes.

These influencing factors have meant that air freight development has arisen mainly because prematurely obsolete passenger aircraft had to be put to use if crippling losses were to be avoided by operators. As the profit margin lowered from the carriage of passengers, any freight that could be stored in the belly hold had to be grabbed as a loss buffer. Finally, all freight operations hoped to increase the overall utilisation of expensive passenger carrying equipment. In

parallel, a study of the recurring failure of all-freight operations to prove economically successful apparently points to a common, unrealistic level of capital investment. In many ways, the forward strides in air freight are impressive but are they soundly based especially if we foresee air freight playing a long-term role within the industry?

In short, the Association questions the soundness of current plans to develop air freight and feels that the prevailing reasons for optimism require fuller evaluation.

A The Freight Carrying Vehicle (FCV)

The choice of words is deliberate.

'Vehicle—that which is used to convey' (*Chambers Dict.*)

In our opinion, the 'conveying' nature of FCV requires proper emphasis. To date, the air freight operation is a far cry from the levels of capacity and reliability offered or attained by the passenger-carrying vehicle in its sphere. *Why?* The Association would venture to suggest that this poor performance stems from using the wrong type of prime-mover. Public transport uses the passenger coach to convey people, not the articulated truck. If this point is accepted, is it wise to compound the error, as seems likely from current trends, by basing our plans upon modified passenger carrying vehicles?

The Association sees the FCV as:

(a) Natural for its function	<i>the conveyance of freight</i>
(b) Effective in its two elements	<i>air and land</i>
(c) Operationally simple	<i>air and land</i>
(d) Reliable	<i>air and land</i>
(e) Robust	<i>air and land</i>
(f) Versatile	<i>air and land</i>

The prerequisite of an effective means of conveyance is '(a)'. Specifications '(b)–(f)' permit the profitable exploitation of the effective conveyance.

The Association believes this specification nears the correct approach to be adopted when considering the vehicle most suitable to realise the full potential of air freight. It is felt that such a specification requires to be submitted since a vague uncertainty troubles our thoughts when studying the current plans to streamline the methods of processing, packaging and documentation. The industry may well find that all its efforts come to naught since the vehicle itself may be unable to convey the increased flow of freight.

To summarise

The Association sees a need to study and then specify the requirements for a true freight carrying vehicle. It is felt that such a study will help clarify the possible role of air freight as either stop-gap, interim or long-term in relation to the overall object of increasing the flow of exports from the United Kingdom.

B The supporting services to the FCV

In the experience of the Association three main factors appear to prevent parity in performance between the present all-cargo operation and the passenger operation.

These are:

- (a) Minimal handling equipment
- (b) Traditional handling processes
- (c) Short-term capital investment

The Association is of the opinion that only by providing

- (a) Fully complementary handling equipment
- (b) Modern handling processes
- (c) Long-term capital investment

can air freight ever aspire to be other than a mere vexatious by-product of the air transport industry. In short, it is the Association's hope that the true nature of the problem and its solution will not be masked by submitting an expensive plea.

In conclusion, may we take this opportunity to express our views on various areas continuously under consideration by the Association with regard to all freight operations. These are:

Operational techniques and performance

Load control

Security control

ie of the load

Integrity control

ie of the load

Safety considerations

ie of the load

We believe it is fair comment that most of our problems under these headings arise from the fact that almost all freight operations are carried out by converted passenger aircraft. In these cases, the aircraft compounds the effect of inefficient processing procedures.

These problems are extremely real and it would be embarrassing to the Association if it were to be the instrument whereby the safe and expeditious movement of air freight could only be achieved at a prohibitive price. Experience with custom-built freighter aircraft serves to underline our belief that, if suitably backed, many of our problems, already headed, would disappear and we have then an efficient freight carrying system.

The Association sincerely thanks the working party for inviting its views on air freight. An attempt has been made to avoid parochialism and instead stimulate a broad discussion on air freight—the sleeping giant.

February 1967

Appendix 8

Requirements on the development of air freight export services to Europe

Paper by BEA

Until recently air freight was regarded by the world airlines as a by-product of passenger service. Little or no capital was invested in separate freight aircraft. The additional direct operating cost of filling space in passenger aircraft, made available by ruling passenger load factors, was minimal, if anything at all. Provided, therefore, that rates could cover out-of-pocket expenses on freight handling and other indirect activities, the airlines were content to make a contribution towards the cost of operation of passenger aircraft and did not look for rates which would reflect the total cost of freight carriage on a primary product basis and allow for the investment of and return on capital.

In recent years, however, the major airlines have begun to invest directly in aircraft for freight carriage and are now seeking a return on capital. Rates will therefore need to be rationalised—not necessarily increased across the board—to bring them in line with production costs.

Surface carriers are moving as quickly as possible towards development of container services to provide through service from the interior of one country to the interior of another. For Britain, this is an essential development for speeding up transport for exports.

Although air transport must continue to provide frequent service for the urgent consignment, unsuitable for consolidation or containerisation, it must participate in the development of through container services if air cargo is to have a serious future as an alternative to surface for the normal flow of goods.

The appearance of 'jumbo' jets on the horizon will, for the first time, hold out the prospect of the participation by air transport in an integrated transport system of the same maximum physical size basis as surface. The key factors are the 8 ft x 8 ft cross section container and the maximum 40 ft length. These are expected to be the limiting sizes for the transport of containers and will therefore become the common denominator between surface and air, setting the maximum containerised size for both.

The importance for air cargo of the maximum size of container as such should not be overstated. What is essential is that future freighter aircraft should be capable of taking containers and pallet loads of these dimensions, but much of the traffic, perhaps most, will be carried in containers or on pallets, the dimensions of which will be modules of 8 ft x 8 ft x 10 ft. (A 10 ft container would give a volume of 640 cubic feet and a load of just over 3 tons at present average achieved densities of air freight. Such consignments should certainly be available for frequent departures before the end of the 1960s).

The early to mid 1970s could become the 'breakthrough' point for air cargo when 'air' will offer a full alternative to 'surface' on a physical basis, over a wide

range of available cargoes, for the normal flow of goods. Air will continue to have a permanent and unique role of providing premium service for urgent and high-value consignments. For the main flow of goods, however, the exporters will be able to make a cost-effectiveness comparison between 'air' and 'surface' on the basis of marketing requirements, capital utilisation and total distribution costs.

By this time, air cargo must have the ground facilities to enable it to take full advantage of the reduction in costs—particularly handling costs—offered by 'system' freighter aircraft.

At the present time, BEA's basic fleet of specialist freight aircraft consists of five Argosy 222 aircraft. These are the only modern 'system' freight aircraft, designed as such from the drawing board, operating on a purely commercial basis in Europe and, probably, the world. The Argosy was designed as part of a 'system' to enable loads to be pre-palletised or containerised either at the airport or at source, so that rapid turn-round and high aircraft utilisation can be achieved. (The Argosy can be turned-round with a full load-on/load-off accomplished in as little as twenty minutes). This is without question the most highly sophisticated freighter fleet operating in Europe at this time—and it is British designed and built. The capital cost to BEA of the Argosy fleet was £4,775,000. At the moment, BEA is suffering a substantial real loss on the operation of the Argosies, partly because the ground facilities have not been available to enable full advantage to be taken of the special features of the aircraft, but also because BEA is operating high-frequency services to all the most important European destinations for British exports, without yet being able to achieve the necessary traffic levels on the inbound flights to give viable average overall load factors.

(BEA's commercial agreements with European parallel national operators are particularly important at this stage whilst losses on freighter operations are being suffered in helping to sustain full frequencies as a service to industry. As larger aircraft are introduced to reduce unit operation costs and hold down prices to the customer, this factor becomes more important. It is interesting to note that, at this time, BEA is earning foreign currency by providing the total capacity for both parallel national operators on a number of routes with the Argosy.)

On the short-haul European routes, the handling element of air cargo costs is critical. Handling costs per ton tend to fall as (a) consignment and (b) package sizes rise. Consolidation and containerisation will be important factors in reducing the costs of European air freight. The concept of through containers will be an important factor in achieving these objectives as well as improving the service, end to end. BEA will therefore expect to participate in the planning and siting of inland container depots and possibly in their capitalisation and operation.

In BEA's view, the conditions for Customs approval and operation of inland examination centres for container traffic need liberalisation for 'air' to participate in their use at the earliest possible date. For example, the minimum container size of 200 cubic feet is too high for air containers currently in use. Furthermore, the insistence on the use of locked containers prohibits the use of pallets or other means of transfer of goods to and from inland depots. *These conditions should be reconsidered to enable airlines to participate in the use of inland depots at an early date.*

The permanent BEA cargo terminal at London Airport (Heathrow) at a

capital cost to BEA for the building alone of more than £4 million is expected to reduce *average* handling cost from £18.66 per ton to £12.25 per ton, ie 34 per cent. If consolidation and containerisation are developed, the reductions in the handling costs per ton on specialist freight aircraft should be much greater.

The current costs to BEA of handling at London Airport have been greatly increased by the protracted delays in providing permanent accommodation. Because of these delays, BEA has been subjected to no less than 17 ad hoc changes to its 'temporary' terminal at a considerable capital cost and without being able to introduce modern handling systems. It is important that the development of ground facilities required to give this country the air cargo network it needs to further its export efforts should be planned well in advance.

In spite of the delay in providing buildings for cargo—now being provided by the airlines themselves—all-freight aircraft bear the same landing fees as passenger aircraft weight for weight. Since freight aircraft do not use the facilities of the airport provided for passengers and passenger handling, their landing fees should be reduced. A relief of this kind would be particularly appropriate and welcome on the short-haul European routes, where terminal costs are a higher proportion of total costs than on long-haul routes.

The appearance of the 'jumbo' jet freighters on the long-haul routes, particularly the North Atlantic, will give a unique opportunity for London Airport (Hathrow) to be permanently established as the natural gateway to Europe, not only for the interline traffic it will bring to operators there, but for the wealth it will bring to the nation. In this connection, the present plans for the development of the permanent cargo area at London Airport do not go far enough in the provision of entrepot facilities. It is imperative that there should be easy direct transfer between aircraft and between bonds. Furthermore, a separate import 'transit shed' should be made available urgently, in which agents could rent space and perform clearance functions for cargo transferred to them either direct from aircraft or through the bonded transit sheds of the operators. The absence of the facility for easy transfer of cargoes to agents for clearance is already putting London at a disadvantage as a freight airport.

To obtain maximum advantage from the superior speed of aircraft, it is necessary to operate to and from airports as near as possible to the centres of origin and destination of cargo traffic. From five or six airports in the U.K., BEA can offer direct service to the Continent from within 50 miles of all the major centres of manufacturing—much nearer to most—and can give British industry a service which will put it on competitive delivery terms with home producers in European markets. BEA has already begun to offer direct services from provincial airports to the Continent and has secured route licences for a number of others. Because of delays in the delivery of aircraft, BEA might find it necessary to charter capacity to operate some of these routes in the initial stages. If BEA is to plan the investment of capital in a freight fleet for the future, including possibly the specification of future new British freight aircraft, it is imperative that the route pattern required to sustain an economically viable fleet of freight aircraft should not be fragmented by the award of licences to other operators. The development of a European air cargo network is going to be economically difficult. It would be impossible if the route network required by BEA on which to base its plans for aircraft specifications, fleet procurement and total capital commitments were not secured for the Corporation from the beginning.

At this stage, it is not possible to specify precisely the aircraft required by

BEA for the mid-1970s and this will be under examination. For the interim, the Argosy 222 and a full Vanguard freight conversion, offering approximately 25 per cent reduction in direct operating costs over the Argosy, are expected to provide the basis of the BEA all-cargo fleet. They will be fully palletised aircraft requiring full ground facilities to enable total costs to be reduced to the minimum.

At the forthcoming IATA Cargo Conference in April 1967, BEA's policies will be aimed at rate rationalisation, consolidation and containerisation. The average size of consignment must be increased and the number of packages per ton reduced.

BEA is confident that, given time to develop all-freight operation on an economic basis and security of route pattern, it can provide the nation with the full air cargo network for Europe that it needs to further the export effort.

J L Guy
January 1967

Appendix 9

Licensing

Extract from a letter from the Secretary of the Air Transport Licensing Board

The only occasion on which the Board have made a study of air freighting in general terms, as distinct from the consideration of individual licence applications, was when the Minister of Aviation asked them, in September 1962, to enquire into the use of air services in the carriage of freight to and from Northern Ireland, and into the possibilities for the development of the carriage of such freight by air. The Board produced two reports, an interim report in May 1963, and a final report in August 1965. These reports were not of course directly concerned with the export trade, but they may nonetheless be of interest to your working party. The interim report contains some observations about air freighting that are applicable to a wider context. The final report may be relevant to the second paragraph of your terms of reference, because it points to some of the factors delaying the development of air freighting in Northern Ireland, notably the lack of interest in the subject shown by most of the trade associations that the Board consulted.

In a more general context the Board are well aware that there is now a widespread expectation of a great development of air cargo services, as is shown for example by the ambitious nature of the joint cargo handling facility that BOAC and BEA are to build at Heathrow. The Board's function, however, is only to grant or refuse applications that are made to them for licences to operate air services.

As your working party will doubtless be aware, most of the freight shipped by air on scheduled services still travels in the holds of passenger carrying aircraft, rather than on all-cargo services. In considering applications to operate services of the former kind the Board do not usually find it necessary to give special attention to the freight aspect of the operation. In many cases the applicant himself appears to regard cargo traffic as an almost fortuitous bonus for the passenger service. The Board therefore consider the application as a whole. But they do from time to time receive applications to mount all-freight services.

You say that it has been represented to you that the present licensing system to some extent inhibits the development of air cargo services. There is of course a sense in which this must be true. Such a criticism can be made wherever entry to an industry is limited and competition is regulated; but its validity depends on the nature and purpose of the control exercised.

In deciding whether or not to grant a licence for a proposed service the Board are required by statute to consider, among other things, the resources and competence of the applicant, the potential need or demand for the service proposed, the adequacy of any similar service already licensed, and the extent to which the service proposed would be likely to result in wasteful duplication of, or in material diversion of traffic from, an existing service. (Civil Aviation

(Licensing) Act 1960, Section 2(2)). In applying these criteria to applications for all-freight licences the Board are usually anxious to avoid the fragmentation of what is still quite a small amount of traffic among too many airlines, and they try to assure themselves that the proposed operation is soundly conceived and has a reasonable chance of success. In a public transport system reliability, continuity and a sound economic basis are important to the economy as a whole, not just a private matter for the firms who are, or would like to be, engaged in the industry, or for a few would-be users of a proposed service.

Some freight is carried, not on scheduled services, all-cargo or otherwise, but on aircraft chartered for the purpose. If the whole capacity of the aircraft is used by the charterer for the shipment of his own goods no licence is necessary. Such charters are, however, becoming more rare, because the average size of the aircraft is increasing, and a consignment has to be very large to take up the whole of the aircraft's capacity. To meet this situation the Board have recently issued a number of experimental all-cargo licences, unrestricted as to route, the effect of which is to authorise the sharing of charter capacity. These licences are subject to conditions designed to prevent the abuse of this facility by the mounting of operations indistinguishable from a scheduled all-cargo service at cut rates. The evidence so far available is that little use is being made of this facility.

On the matter of tariffs for the carriage of freight, the Board have adopted a liberal policy. They hold that for the development of air freighting airlines must be able to negotiate and close business quickly at competitive rates, or apply special commodity rates to particular traffics, without the possibly protracted process of applying to the Board for approval of the tariff. Generally speaking, the Board are required to prescribe in each licence the tariff to be charged, but they have limited discretion not to do so in certain cases. They have exercised this discretion to dispense with a tariff provision in respect of the carriage of freight wholly within the United Kingdom and its colonial and other dependent territories. The Board are not free to take similar action on international routes, because fares and rates on these are determined by inter-governmental agreement, making use of the rate-fixing machinery of the International Air Transport Association.

You ask how the Board see the relative roles of the Corporations and the independent airlines in the freight field. The legislation under which the Board operate does not permit them, in their view, to form any such pre-judgment of applications that may be made to them. It is open to any airline, however constituted, to apply to the Board for a licence on any route. In the subsequent proceedings all parties appear as equals before the Board, who must then decide the case on the evidence and argument put before them. The regulations under which the Board are required to operate are designed to ensure complete impartiality and a full public ventilation of all the issues.

The Board hope that you will find these comments helpful, and will be glad to supply any further information your working party may require.

Appendix 10

Air freight agents

*Paper by the National Air Section of the
Institute of Shipping and Forwarding Agents*

Forwarding agents have been involved in air freight since the earliest days of civil aviation, but prior to 1945 few had offices and staff engaged exclusively in this field. Today some 80 per cent of exports and 45 per cent of import tonnage of air freight are handled by agents. The forwarding agent performs a useful function both for his client and to the airlines and, to a lesser extent, the airport authorities.

Services rendered to the client

The agent provides a competitive, personal service, according to the needs of his client. For exports this may involve collection of freight from the client's premises, checking weight and measurement, preparation of documents, (air waybill, Customs specification, consular invoices and delivery instructions to an overseas agent). He delivers the freight correctly labelled, with documents attached to the appropriate airline for shipment. These functions are generally performed within a few hours. Telex and radio communication, as well as night staff, are employed by leading organisations to speed collection and despatch of freight.

A similar function may be performed on behalf of importers, but in reverse, with emphasis on clearance through Customs and delivery to the importer's premises. A regular importer usually appoints one agent to handle and clear freight arriving by any airline. The agent, being familiar with the particular requirements of his clients, is able to avoid the delay which would arise if the importer had to give instructions on each individual shipment.

Apart from the documentary function, which requires specialised knowledge, and the ancillary transport operation, both of which he can provide more economically, the agent is able to give impartial advice on the most suitable service for his clients, as well as saving him the task of dealing with a large number of airlines.

Another important service provided by agents is consolidation or groupage services, which provide a saving in cost combined with a closer control of the goods through to their final destination. On some routes a combined air/sea and air/land service is operated by agents. It is also part of an agent's function to have a reliable network of overseas correspondents (in some cases their own staff or associated companies) and through these connections an agent can assist his client to sell goods on terms comparable to those offered by the local suppliers, to exhibit products at foreign trade fairs and perform other services.

Services rendered to airlines

Forwarding agents perform useful functions for the numerous airlines in providing composite collection/delivery services which each airline would otherwise have to arrange individually, assuming responsibility for collection and delivery of freight ready for shipment, and generally promoting air transport. It is also economically advantageous for airlines to deal with and maintain accounts with a limited number of agents who are thoroughly familiar with all aspects of air freight and deliver freight in bulk, than with a very large number of individual shippers, many of whom are not familiar with air freight operations.

The operation of an air cargo consolidation service by agents is also of benefit to airlines, producing regular bookings for various flights. However, the scope for this activity is dependent on the IATA rate structure, which varies for different parts of the world, customs regulations and, of course, potential volume of traffic to any potential destination. Consolidation is an important factor in air traffic.

Hitherto the fact that the major airlines, particularly BEA and BOAC, have been able to lease part of their bonded warehouse accommodation to a number of individual agents has reduced the volume of Customs clearances they have had to undertake, as well as enabling the agents concerned to provide a speedier personal service to importers.

Services rendered to airport authorities

The operation of air cargo agents is of benefit to airport authorities largely by way of reducing traffic congestion. Agents tend to deliver exports to the airlines' receiving sheds and remove imports in consolidated vehicle loads.

Matters effecting operations of air cargo agents

All the principal air freight agents, and most of the smaller ones, are represented in membership of the National Air Section of the Institute of Shipping and Forwarding Agents. The Section operates through a central committee and a number of other committees located at the principal airports. The main function of the National Air Section in its present form is to endeavour to protect and further the interests of the agents and negotiate on their behalf with the airlines, HM Customs, airport authorities and others who may have some influence on UK air cargo operations, thereby benefiting the air cargo industry in general.

Relationship with IATA

Whilst on the whole co-operation with these various bodies has been good, the relationship between air cargo agents generally and the International Air Transport Association has hitherto been the very opposite. In order to handle air freight exports, an agent must be licensed by IATA as an air cargo sales agent and/or an air cargo consolidator. Both the agent's remuneration and responsibilities are determined largely by IATA, which is apparently the sole arbiter on interpretation of the terms of its cargo sales agreements. Other matters affecting the vital interests of agents are discussed at IATA conferences without any reference to them whatsoever. And it is only quite recently that FIATA (International Federation of Forwarding Agents' Association) has been successful in establishing a direct, if tenuous, contact with IATA on an international plane.

An example of what agents consider to be an iniquitous interpretation of a

clause in its cargo sales agreement is the severe penalties inflicted on several UK agents for accidental violation of the clause forbidding the charging of freight differently from what is laid down by IATA. The penalties inflicted (but fortunately withdrawn before implementation on being legally contested) involved suspension of the agent's licence. It was always assumed that such a severe penalty, which takes away the livelihood of an agent, would only be imposed where an agent was deliberately contravening the rules. However, the matter continues to cause grave concern because occasional clerical errors are inevitable in the thousands of consignments handled daily, due to the complicated process of assessing freight in limited time in order to avoid delays in despatch.

Decisions made at the Venice Cargo Conference of IATA in 1965 and agreed to by the British delegates, even if reluctantly, had sweeping, detrimental effects on agents, and the fact that these decisions were (with one exception) ratified by the British Government before their full text was even known to agents, seems most unsatisfactory. The matter was taken up with the Ministry of Aviation and it was generally agreed that confidential discussions on matters directly affecting the interests of agents, prior to future IATA conferences could have a beneficial result to all parties, and efforts would be made in that direction.

Two notable unilateral decisions taken at Venice with most prejudicial results were:

(i) The decision to abolish the Customs bonded 'cage' system operated by the national airlines at Heathrow. This move was apparently initiated by foreign airlines who did not carry enough freight to justify the provision of cages, and considered the system gave an unfair advantage to those airlines able to operate it. The British Government fortunately reserved its position in ratifying this particular resolution. Nevertheless, the result constitutes a threat to the very livelihood of a large number of old established and enthusiastic air freight agents without any word of consultation or notice either before or immediately after the conference. It also underlines the ineffectiveness of the alleged IATA rule of 'unanimous' decisions; a minority is expected—and in fact does—bow to a majority view no matter how ill-informed the latter might be.

It is of interest to note that a year after this decision the cage system was introduced and now operates at Brussels airport. This is permissible because in Brussels the warehouse is owned by the airport authority, whereas at Heathrow the airlines are obliged to build their own!

Although efforts were made to obtain a separate agents' bonded transit shed in the new cargo terminal with the support of the BSA, BOAC, the foreign airlines and the British Airports Authority, HM Customs are not prepared to grant that facility. Therefore, unless the British Government is prepared to prevent this particular IATA resolution from taking effect in this country, agents will not be able to carry out their present function in the handling of import traffic.

(ii) A further decision taken by IATA at the Venice conference led to a local decision of all airlines operating in the UK, irrespective of the amount of freight handled by them (if any), to deprive agents of a share of the charge made for handling and processing consignments. This decision was made in order to provide the airlines with increased revenue to meet increased costs of this operation, ignoring completely the fact that agents' costs had risen no less proportionately, and that a large part of the handling operation is in fact carried

out by agents. This sudden loss of revenue to meet operating costs amounted to quite substantial sums in the case of the larger agents.

These illustrations underline the weakness in the present relationship of IATA members and their agents, which should be remedied as speedily as possible, namely:

- (1) There would appear to be a complete absence of communications at high level resulting from IATA's stubborn refusal of frank consultation, even at a purely national level.
- (2) The apparent but sad lack of appreciation by IATA that their agents' interests and problems are, in fact, common to their own.
- (3) The very unsatisfactory balance of argument at IATA meetings when those vitally interested can, and are, easily swept aside by the relatively uninterested. This occurs regularly even with the so-called 'unanimous' vote which, as operated at the moment, manifests all the weaknesses of simple majority decisions without any of its advantages.

Economics of air cargo agency operations

The fundamental question of the economics of air cargo operations by agents is becoming increasingly pressing. Costs have risen steeply in recent years, but freight rates have been falling with the introduction of larger aircraft. In consequence the commission on freight, which is the agent's main source of revenue on exports, has also fallen.

A greater contribution could be made by agents to the invisible exports of this country if consolidated traffic could be attracted to this country for trans-shipment. This is impracticable at the present time due to current UK Customs regulations.

Since the success of the agency business depends largely on giving a personal service to clients, the scope for economies of scale are very limited. Many businesses have survived only through being subsidised by parent companies prepared to invest in the future of air transport, but immediate prospects are depressed due to:

- (a) the additional cost burden of Selective Employment Tax, which at present bears heavily on agents but not on airlines who are offering similar services
- (b) more onerous duties imposed by IATA on processing of shipments which add to agents' operating costs without any corresponding increase in revenue
- (c) the impending elimination of the 'cage' system at airline bonds at Heathrow, which will mean a reduction in handling revenue
- (d) the discontinuance of a sharing of the handling charge by the airlines despite the fact that a large part of the handling is performed by agents.

Recommendations

In our opinion matters affecting the expansion of air freight and reduction of existing impediments would be reduced if:

- (1) All matters affecting agents in the UK to be dealt with by IATA only *after* consultation with the National Air Section of the Institute of Shipping and Forwarding Agents.
- (2) Resolutions affecting British agents' interests to be submitted for comment to the NAS of the ISFA *before* submission to an IATA cargo conference.
- (3) Resolutions agreed upon at IATA cargo conferences and affecting agents' interests to be submitted for comment to the NAS of the ISFA *before* ratification by HM Government, which should make clear to all concerned that

IATA resolutions will not be ratified unless HM Government are satisfied that, where they affect third parties, the latter's interests are not unreasonably prejudiced and they have had an opportunity to state their case.

(4) Participation by agents with the interested airlines at all national conferences or committees set up to consider questions of purely local interest, such as handling charges, service fees, cartage rates, etc.

March 1967

Appendix 11

The role of the British Airports Authority in relation to air cargo

Paper by the British Airports Authority

The British Airports Authority was set up in 1966 by Act of Parliament to take over and manage Heathrow, Gatwick, Stansted, and Prestwick airports and to provide at those airports, and at any others it might take over with the Government's consent, such services and facilities as are in its opinion necessary or desirable for their operation, excluding navigation services. In carrying out these duties it has to have regard to the development of air transport and to efficiency, economy and safety. It also has to pay its way, taking one year with another.

The services and facilities provided by the Authority for air cargo traffic include runways, taxiways, aircraft stands, airside roads (including a major tunnel at Heathrow), aircraft maintenance areas, cargo transit sheds (or land on which airlines can build them), accommodation for HM Customs and freight agents, landside areas for loading and unloading vehicles, vehicle parks, roads, and ancillary services, such as heating, lighting, power, water and staff amenities such as canteens. The Authority's head office staff, airport management staffs and police force all devote considerable time and energy to providing adequate facilities and arrangements for air cargo.

The working party is aware of the Authority's plans for developing in co-operation with the airlines a major new cargo area at Heathrow covering about 160 acres of airport land and costing in all some £23 million. The physical work to be undertaken by the Authority started some time ago and is progressing well: work has also started on some of the areas to be developed by the airlines. Developments on a smaller scale are taking place at Gatwick and Prestwick, to cope with the expected increase of traffic at those airports.

The planning, construction and operation of such air cargo terminals require the closest co-operation with HM Customs, and other government departments, local authorities, airport consultative committees, airlines and agents. Many real conflicts of interest become apparent in the course of planning and have to be resolved in the most practical manner. Often the best solutions that can be practically achieved fall short of the ideal, but the Authority is not itself in the business of carrying cargo and must therefore give full weight to the views of those who are.

For example, the 1963 report (CAP 192) which initiated the development of Heathrow's new cargo area included a recommendation that airlines should co-operate in developing and operating a communal import shed. This recommendation was fully supported by the Ministry of Aviation (who then owned and managed Heathrow) and by HM Customs, and the merits were also recognised by BOAC, BEA, the British Independent Air Transport Association and the Institute of Shipping and Forwarding Agents, who were all represented on the

working party. However, in the course of subsequent detailed planning it proved quite impossible to persuade the airlines to agree to a common import shed, although the Ministry and HM Customs tried very hard to do so. After many months of most difficult negotiations and against the prospect of not meeting the 1968 deadline, a plan had to be evolved that took into account the airlines' absolute insistence on retaining their commercial identities and offering their customers individual and separate cargo services in the terminal. In the course of these negotiations the Ministry had to have regard to the airlines' rights as partners in this joint enterprise, to their position as prospective rent-paying tenants (the cargo terminal had to be an economic enterprise from the Ministry's point of view as landlord) and, perhaps most important of all, to the need to continue to attract airlines and their traffic to Heathrow. HM Customs, who were very much in favour of a common import shed for reasons of revenue security and staff economy, nevertheless considered themselves obliged to accept the realities of the situation and meet with the airlines' requirements. When the Authority took over in April 1966 all the main decisions had been taken, and the Authority had no choice but to go ahead on the plan already agreed. Any attempt to re-open the argument then, or now would delay the opening of the cargo area (scheduled for December 1968), and this would be quite unacceptable.

It might be suggested that the Authority should consider building *and* operating air cargo terminals itself rather than co-operating with airlines on building and leaving all the cargo-handling to them. This would apparently give the Authority the power, which it does not now have, to design the cargo sheds to meet the requirements of all concerned. This solution need not be ruled out for the future at airports other than Heathrow. The obvious advantages are those deriving from efficient use of land, the economies of scale and the saving of Customs staff. In particular circumstances, also, the airlines might welcome the savings in capital and staff that ought to result. The Authority will, however, have to look carefully at proposals for greatly increasing capital commitments and for setting up a special warehousing unit with no prospects of doing business at Heathrow. There is much to be said for letting the cobbler stick to his last, and even more for reaching an agreed rather than imposed solution, particularly when so many of our customers are foreign-based.

In general, the Authority is in favour of any efficient system and prefers one that is economical in the use of space and capital resources. In the peculiar circumstances of Heathrow, however, the volume of traffic is likely to be so large that a single import shed could well be too large to be operated economically; this is the other face of the argument in favour of co-operative effort at airports where individual airlines' traffic is slight. The Authority considers however that it would be more profitable to concentrate attention on improving procedures for handling and recording movements of bonded cargo than to strive for the theoretically best solution even when this is unacceptable to the other interests concerned.

December 1966

EXPORTS BY AIR

A report by a working party of the
Economic Development Committee
for the Movement of Exports

LONDON
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The National Economic Development Office is an independent body, publicly financed, which represents the three parties involved in industrial and economic development — management, trade unions, and government. This publication has been prepared by NEDO which is solely responsible for its contents. For administrative convenience the booklet is printed and published through Her Majesty's Stationery Office.

Foreword

Air freight is expanding rapidly as a competitor to other forms of transport, and already nearly 10 per cent by value of British exports go by air. The Movement of Exports EDC therefore thought it right to give some close study to the new developments in this field of transport with the objective of removing obstacles to its expansion and so stimulating its contribution to the flow of exports and to the entrepot trade.

This report is the product of a small working party chaired by Mr Kerry St Johnston. It has been adopted by the EDC, which considers that it should be available to a wider audience. I hope that it will be read by all those concerned with moving our exports more quickly, and in particular that the recommendations and conclusions will be seriously considered and put into effect where appropriate by those concerned.

A study of this kind cannot be undertaken without the help of a large number of outside bodies, and I am most grateful to all those who have contributed. I should also like to thank, on behalf of the EDC, the chairman and members of the working party for all the time and hard work they have expended in producing such an excellent report. Some of them have private interests in the field of air freight; their expert knowledge has been made freely available to the working party and has contributed greatly to the value of the report.

Caldecote

Chairman, Movement of Exports EDC

21 June 1967

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Preface

The EDC for the Movement of Exports, at its meeting in July 1966, decided to set up a working party on air freight and I was invited to take the chair. We have now completed our work and I attach our report for the consideration of the EDC.

Part 1 consists of a short introduction, a summary and a digest of conclusions and recommendations for action by appropriate bodies. Part 2 is the main narrative of the report. Some of the papers and information submitted to the working party are attached as appendices.

Within the framework imposed by the desirability of presenting a report fairly quickly, we have had valuable discussions with a number of operators and users of air freight, some of whom have attended our meetings, and members of the working party have made visits to airports and airlines both in this country and abroad. Of the latter should be singled out a visit to New York made in the realization that to prepare a balanced report we must gain first-hand experience of developments in the USA, which are broadly at a more advanced stage than elsewhere. Lessons learnt from this visit appear at several points in the report.

Our thanks are due to the many individuals and organizations who have helped us in our deliberations and provided us with information and views. These include the Civil Aviation Department of the Board of Trade and the British Air Line Pilots Association, both represented on the working party; also BEA, BOAC, the British Airports Authority, the Institute of Shipping and Forwarding Agents, the British Shippers' Council and the Air Transport Licensing Board; finally HM Customs and Excise and, in particular, Mr E P Brown, a Deputy Chief Inspector, whose presence on our New York visit was of the greatest help. In addition we have had assistance from a number of airlines, airport managements, agents, and providers of aircraft and equipment both at home and abroad.

We have concentrated, throughout our activities, upon looking ahead. The successes to date of British air freight interests both as providers and users are manifest, and all our proposals are designed to provoke action and thought for the future.

K St Johnston

Chairman of the working party

25 May 1967